DOCUMENT RESUME

ED 424 749 FL 025 529

AUTHOR	Vermillion, DeAnn M.
TITLE	Developing Critical Thinking Skills in EAP Students.
PUB DATE	1997-08-00
NOTE	123p.; Master's Thesis, Biola University.
PUB TYPE	Dissertations/Theses - Masters Theses (042) -- Guides - Classroom - Teacher (052) -- Information Analyses (070)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Affective Objectives; Classroom Techniques; *Critical Thinking; Discourse Analysis; *English for Academic Purposes; *English (Second Language); Media Selection; Second Language Instruction; Skill Development; *Thinking Skills

ABSTRACT

It is argued that there is a great need to integrate critical thinking instruction in courses in English for academic purposes (EAP) and English as a Second Language (ESL). Three primary components of critical thinking are identified: understanding the author's intended meaning; synthesizing all available information, which also includes inferencing; and analyzing. The analysis component involves evaluating logic based on the truth and validity of an argument's claims, as well as understanding author stance and word connotations. A discussion of approaches and techniques for applying this information in the classroom focuses on two elements in learning critical thinking skills: (1) affective factors, and (2) practical applications in understanding, synthesizing, and analyzing text. A sample lesson plan on the topic of critical thinking about tolerance is included. Appended materials include two forms for evaluating the appropriateness of texts for critical thinking instruction and a sample article used as a text. Contains 93 references. (MSE)

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ED 424 749

DEVELOPING CRITICAL THINKING SKILLS IN EAP STUDENTS

A Thesis

Presented to

the Faculty of the School of Intercultural Studies

Department of TESOL and Applied Linguistics

Biola University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts in TESOL

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by

DeAnn M. Vermillion

August 1997

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DEVELOPING CRITICAL THINKING SKILLS

IN EAP STUDENTS

by

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ABSTRACT

DEVELOPING CRITICAL THINKING SKILLS
IN EAP STUDENTS

DeAnn M. Vermillion

There is a great need to integrate critical thinking instruction into English for academic purposes (EAP) and English second language (ESL) classrooms. ESL students are intelligent human beings and need to be given the opportunity to practice and further develop their reasoning skills in their second language. There are three primary components of critical thinking: understanding the author's intended meaning, synthesizing all available information (which also involves inferencing), and analyzing. The analysis component involves evaluating logic based on the truth and validity of an argument's claims, as well as understanding author stance and word connotations.

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ACKNOWLEDGMENTS

I would like to thank my husband, Joel, and my thesis advisor Peggy Velis. Thank you both for your continual encouragement, friendship, and support. Your dedication to the pursuit of Truth has greatly inspired me.

INTRODUCTION

During my first semester of study at a university in Costa Rica I found myself struggling quite a bit. I had considered myself to be quite fluent in the Spanish language. I excelled in my grammar classes, and I had very few problems conversing with any native speaker I met. Yet for some reason, upon entering my first "real" classroom taught in my second language, I felt like a beginner again. I was used to rattling off Spanish answers without even thinking about anything in English; however, in this classroom I found myself translating the information from Spanish to English and then back again.

What I realized was that even though I felt comfortable using the Spanish language, I did not know how to think deeply about the more complex ideas I was now encountering without translating the ideas back to my more familiar, native language. The only barriers I had been trying to overcome were the surface structures of language such as grammar, pronunciation, and vocabulary. Throughout my foreign language study my mind had never been challenged with difficult ideas, and when my intellect was finally challenged in the Spanish-speaking university, I felt like I needed to go back to a beginning-level Spanish class again. This was the first time I realized the complexity and the challenge that critical thinking presents, especially to non-native speakers.

There is quite a big difference between fluency and proficiency in a foreign language. The fluent language learner has a good grasp of grammar, a fairly extensive vocabulary, and can do well in most social settings. Proficiency in a language, however, has to do with one's ability to look beyond the surface structures of language into the elements which lie underneath, such as organization and logic. Answering questions that

deal with why and how an author makes a particular point place far greater cognitive demands on a learner than do rote recall questions or fill-in-the-blank grammar activities. One's proficiency in a language has a great deal to do with one's ability to think critically in that language, that is, the ability to go beyond what is explicitly expressed in order to analyze both how and why it is expressed and the implications that the expression draws.

Thinking critically is difficult in one's native language, but it is an even greater challenge in a second language because the familiar clues one relies upon to go beneath the surface structure seem to disappear. Fortunately, with practice and instruction many people learn to think critically in multiple languages. However, it takes just that, practice and instruction. For the most part, my foreign language classes never challenged my intellect. I learned how to conjugate verbs, use vocabulary, and write about my day, but I did not learn how to think critically in Spanish. In fact, it was not until I attended my first class in a Spanish-speaking university that I was really forced to think critically in Spanish. Needless to say, I struggled.

It was through that challenging experience that my interest in the critical thinking process began to develop. The fundamental message of this paper is that foreign language teachers, in particular EAP teachers, can and should help students transfer and continue to develop their critical thinking skills. The first part of this paper discusses the need for and the theory behind critical thinking, especially as it relates to ESL instruction, while the second part lays out many of the skills involved in thinking critically, as well as practical ways educators can teach these skills in their classrooms.

PART ONE

THEORY

1. THE NEED TO TEACH CRITICAL THINKING

Based upon the need to more adequately address the issue of critical thinking in English for academic purposes (EAP) classrooms, this paper will establish a case for why EAP teachers must teach critical thinking skills, define what critical thinking means, and give practical insight into how teachers can help students develop critical thinking skills. In today's world there is a great deal of information and discussion about critical thinking. While a wide variety of ideas and theories concerning critical thinking are being published, many teachers continue to struggle with what it means to think critically and how to practically integrate its teaching into their classrooms. There are several reasons for the continued confusion in this area. Perhaps the most important reason, though, is that there has been a grave error made by many in their attempts to define critical thinking and its goals. The error lies in one's fundamental beliefs about what constitutes good thinking. If all ideas, even ones that contradict each other, are believed to be of equal merit, then critical thinking is of little value. For the purposes of this paper critical thinking will be defined as the process of improving one's epistemic situation (Chisholm, 1989), that is, one's belief structure, by means of intelligent reasoning.

Critical Thinking Instruction and the EAP Student

Developing the critical thinking skills of students should be important to teachers in every discipline, but it should be of particular importance to the teachers of those students who are learning English for academic purposes (EAP). In helping to prepare students to attend an English-speaking university, teachers should not only be devoted to the teaching

of language skills, but they should also be committed to developing the thinking skills of their students. There are several important reasons why integrating instruction in critical thinking into the EAP classroom is necessary. Due to their educational background, critical thinking may be something that EAP students are unfamiliar with, but it is an important skill that will be needed throughout their university experience. Teaching critical thinking is an important aspect of preparing ESL students to be successful in their future university studies. Teaching critical thinking is also an important means of continuing to challenge second language learners intellectually. It is important to allow students to use their minds and interact with difficult materials and ideas. Although ESL students may not be able to express their thoughts very well in English, they still need the opportunity to have their intellect challenged. The first section of this paper will discuss the specific need that exists for EAP teachers to teach critical thinking to their students who are preparing for the university.

Many EAP students come from educational systems where critical thinking has not been encouraged. Substituted instead are rote learning methods often involving extensive memorization. In an article written about the meaning of reading for East Asian students, Bailin Song claimed that for these students questioning a text, an author, or a professor is viewed as a weakness on the part of the student (Song, 1995). Earlier, Barnes had noted that "rote learning is the mental storage of discrete items with little consideration for how they fit with the existing cognitive structure and previously stored information" (Barnes, 1985, p. 143). Students coming from backgrounds where rote learning is the primary means of education will most likely find learning in a western university a difficult task, since in western universities examining multiple sides of an issue, questioning, and giving personal input are expectations teachers have of their students.

Not only is instruction in critical thinking as a component of education necessary for EAP students so that they might succeed in western universities, but many would argue

that learning by means of critical thinking is an improvement over rote learning. H. D. Brown feels strongly about the ineffectiveness of rote learning, especially as it applies to second language learning. In the following summary of his position, his reference to meaningful learning correlates with many factors involved in critical thinking. H.D. Brown uses the following argument to emphasize the benefits of using "meaningful learning".

> An overview of my argument can be given in six steps: (i) rote learning is a mechanistic process peculiar to only a small fraction of human learning; (ii) meaningful learning, an efficient conceptualizing process or organization, is characteristic of most human learning; (iii) retention, or long term memory, is the crucial determiner of whether or if something has indeed been learned; (iv) retention of material rotely learned is extremely inefficient since forgetting is easily induced by interference; (v) retention of meaningfully learned material is, in contrast, extremely efficient since forgetting involves a selective "cognitive pruning" procedure which actually enhances retention; (vi) in an activity such as second-language learning, which is conducive to meaningful learning processes, maximal retention could be achieved by means of efficient subsumption and pruning procedures. (1972, pp. 218-219)

Helping students learn by means of critical thinking may not only be beneficial because of their choice to study at a western university, where the practice of critical thinking is--at least in theory--expected, but according to Brown it may have significant advantages over rote learning.

In a presentation at the 22nd annual TESOL Convention A. M. Wyatt-Brown (1988) discussed the areas in which international university students experience the greatest problems. Not surprisingly, critical thinking was at the top of the list. Teachers of EAP students need to enable their students to succeed in western universities. Thus, it seems clear that a primary component of this is to teach the skills involved in critical thinking, and to provide students adequate time and opportunity to practice and develop these skills which they will continue to develop throughout their university education.

One important aspect of teaching critical thinking that language teachers must be concerned with is giving the students tools to understand the subtleties of words, meanings, and the unfamiliar ways in which words and expressions can be used, so that

the intelligence of the ESL students will not be hindered due to the difficulty or confusion of the language. Likewise, language teachers need to be concerned with helping their students become better thinkers by teaching principles and strategies that EAP students can use to distinguish good thought from bad thought and by providing the students with challenging material which will require them to practice the theories they are being taught. Good thinking skills are perhaps the best tools ESL students could have against becoming "victims" of difficult words, unfamiliar word orders, challenging material, and poorly argued, yet persuasive texts (Runkle, 1978). John B. Carroll states that "it is through the adoption of appropriate learning sets and strategies that learners can often be successful even when the talents they bring to the task are only moderate, or indeed only minimal" (1977, p. 2). Though not stated explicitly, it seems reasonable that strategies for learning by means of critical thinking could be applied to this situation and that the "low talents" described by J.B. Carroll could be considered the disadvantage ESL students have in an English-speaking university over native English-speaking students. Moreover, after several research studies he conducted, Shmeck concluded that "students classified as more thoughtful, or more deep and elaborative, do indeed demonstrate faster learning, better memory, and higher grade point averages" (1981, p. 384).

However, it is important to note that in order for critical thinking to be an effective strategy and tool that students can use in their university classes, they must strive to do their critical thinking in the English language. If the students must translate deep thoughts back into their own languages and then back into English, an unnecessarily large amount of time and energy would have to be expended. Furthermore, the results in English would often sound awkward and foreign due to the varying word orders and usage of words amongst various languages (Nida, 1950).

The most obvious component of the EAP teacher's task in preparing students for a successful university experience is to help them become proficient in the English language.

Interestingly, there seems to be a close relationship between good language learning strategies and critical thinking skills. Studies about the characteristics of good language learners have shown that good language learners make efforts to think in their second language as soon as possible (Rubin, 1979). J.B. Carroll writes that one characteristic of good language learners is that they try to understand the logic and strategies that native speakers use in communicating (1977). After studying 'good language learners', Rubin concluded that they are good at making guesses and inferences. (Rubin, 1979). It appears that good language learners have at least some of the same characteristics of critical thinkers. Perhaps in teaching students critical thinking skills teachers can help them to become better language learners.

Not only is the critical thinking instruction necessary for the continued improvement of a student's language skills and for their future university experience, but it is important for continued motivation to work hard and continue growing in knowledge and intelligence while in their EAP classes. Second language teachers should continually challenge students to think critically so as to not insult the intelligence of the learners who are thinking human beings, but who have yet to learn to express their thoughts with ease and fluency in a foreign language.

To conclude this section on the need for critical thinking instruction in EAP classrooms, perhaps it is best to simply read about the university experience of one international student. The following description beautifully summarizes the great need for, and benefits of, critical thinking.

> As time went on, Mai realized that in most of her courses the crucial skill was critical thinking. This meant, for example, that she had to be able to write papers in which she organized and synthesized complex data. She had to be able to read an article and draw her own conclusions based on it. In time, she discovered that doing her own thinking brought her success and personal satisfaction in her academic work. (Dubin, 1983, p. 15)

Teaching Critical Thinking as Central to the Role of the Educator

People may have a variety of different ideas about the role of teachers in modern society. All too often it seems that society has lost the true meaning of the teacher's role. This is why it is necessary to establish a common understanding of the role of the teacher. The role of teachers should be to help their students become better human beings by guiding them to a new level of knowledge and giving them tools for reaching logical conclusions on their own.

Unfortunately, in modern society a "better" human being is defined as one whose earning capacity and level of tolerance has increased (Holmes, 1983). The result is that too often in the classroom, instead of teaching students how to learn and think, teachers substitute the easier task of merely presenting knowledge (DeBono, 1976). In her book, *Critical Thinking: Theory, Practice and Possibilities*, Joanne Kurfiss noted the following:

> If education is only to teach basic facts, then critical thinking plays only a minor role and rote learning is sufficient. If, however, the role of education is to develop greater reasoning skill in order to cope with and make decisions about life and society, then critical thinking plays a central position, since reasoning is impossible without critical thinking. (1988, p. xv)

Malcolm Knowles suggests that due to the vast amount of information directly available to today's students, educators need to concentrate their efforts on developing in their students the skills and attitudes that are necessary for self-directed inquiry (1980). Students must be taught how to learn and what it means to think well. Unfortunately, too often teachers are reduced to trainers with the task of simply assisting students in learning specific "practical" skills. Learning is no longer viewed as valuable apart from its pragmatic function and monetary rewards (Holmes, 1983). Furthermore, teachers today are expected to promote an environment of tolerance in their classrooms where all rationalized ideas are to be viewed as equally "good", except of course the person who denies the epistemic parity of all ideas.

The fundamental problem is that the majority of society no longer cares about, or has false beliefs about the nature of human beings. A teacher cannot guide a student on a journey to become a better human being if the teacher has a misconception of what it means to become a better human. Fundamental to this paper is the premise that human beings are designed for something. Life's journey is primarily about seeking that which is true, living life in accordance with that which is true, and thereby becoming what humans were created to be. That humans were created as rational beings enables them to search for truth, know when truth is found, and decide whether or not to live life in accordance with the truth that is found.

A primary task of the teacher should be to teach students how to discover truth on their own. It is of little value for teachers to fill the classtime by simply presenting students with lists of facts. On the other hand, by providing students with knowledge along with tools so that students can evaluate their own beliefs, teachers will create an environment where learning is much more meaningful and effective.

> If people can discover things on their own, they not only acquire new knowledge but also develop skills for effectively utilizing what they already know. Note, however, that this argument requires some qualification. It would be a mistake to assume that discovery learning requires that people should be given no guidance whatsoever. Certain types of guidance are often necessary, and a major goal of effective instruction ought to be to set the stage so that discoveries are more likely to be made. (Bransford, 1979, p. 243)

Teaching students critical thinking skills is a very important means of setting the stage for discovery.

A person's ability to reason and think critically is a distinctive feature of being human, and continually developing critical thinking skills is an essential aspect in the quest to become what each person was created to be. Unfortunately, even the concept of what it means to be created as a rational being has been redefined in today's society. In his book *The Idea of The University: A Reexamination*, Jarosolav Pelikan described how the meaning of what it means to rationalize has been changed over time. He noted:

> The word *rationalize* used to carry the positive meaning "to render conformable to reason" and to organize in a rational order or manner, as when Newman's contemporary Herbert Spencer said: "When life has been duly rationalized by science, care of the body is imperative." But today, as a recent psychoanalytic dictionary makes clear, the term rationalization is utilized, uniformly and almost exclusively, to refer to " a process by which an individual employs subjective 'reasonable,' conscious explanations to justify certain actions or attitudes, while unconsciously concealing other unacceptable motivations. Rationalization is always considered defensive." . . . The change in the very meaning of that word suggests a profound reorientation of the concept. (1992, pp. 27-28)

Pelikan points out how society's outlook on one of the very key components of what it is to be human has changed over time. No longer is a better human one who reasons and conforms his life to the truth, but it is one who is good at using subjective reason to justify his actions. Under the conditions that Pelikan described, thought and reason are merely used to justify one's actions, and the idea of becoming a better human is essentially meaningless unless determined by one's accumulation of wealth.

Fortunately, there can be more to education than what modern society tends to present. The value of education should not be based primarily upon the future material rewards it will reap. Learning does have, and should have, value apart from its pragmatic functions, such as the possibilities it opens for an increased earning capacity. Teachers should be more than trainers or promoters of tolerance. They should be challenging students to use their minds and guiding students towards improving their beliefs, no matter what subject they are teaching.

These two views of teachers, as trainers and promoters of the idea that people should be tolerant of all ideas as though they were of equal merit, have penetrated modern educational practices and have been extremely detrimental to today's society. Their influence can clearly be seen in most ESL classrooms as well. Teachers often do not challenge students to think beyond the basics of the lessons into the implications, different possibilities, rightness, wrongness, or logical structure of a text. Too often ESL students are praised for any output they give as long as they are using the English language, without

enough attention given to the students' logic or thought process. Furthermore, critical thinking has come to mean independent or "unique" thinking rather than correct thinking.

To be a teacher means to be an educator. To be an English teacher means to be an educator in the broad and complex field of language and all that it encompasses. To reduce an EAP class to merely a time of training in the rules of the English language is to greatly decrease the value of language learning and to probably leave the EAP student intellectually unchallenged and unprepared for the university. If helping students learn how to learn and think well is indeed a primary object of education, then it should be the object of the ESL class as well. EAP teachers must see the importance of their role, and the responsibilities that should naturally be a part of their job. ESL teachers should struggle in trying to understand the goal of education, and how crucial the interface between thought and intellect is in moving closer to that goal. As Runkle stated so clearly, "good thinking is indispensable whenever truth is our object" (1978, p. 2).

Language and Thought

While language theorists differ greatly in their beliefs about certain aspects of critical thinking, one area in which linguists, psychologists, and philosophers alike all tend to reach some sort of consensus is in the belief that language and thought are intimately related. Seeking to develop the critical thinking skills of students should be a primary task of all teachers, but it is a particularly crucial job for language teachers due to the nature of the subject: language. The unique human capacities for language and thought, and the interface between the two, are topics that have intrigued philosophers, linguists and scientists for centuries. Discussing the nature of the human capacity for language or thought is beyond the scope of this paper, though it cannot be doubted that these capacities do, in fact, exist.

It is necessary for this paper, however, to acknowledge the important relationship that exists between language and thought. The American scientist Charles S. Peirce held that thought and logic were necessary preconditions for all representational systems (Oller & Omdahl, 1994). Albert Einstein believed that thought was foundational to language and that language serves us in expressing thoughts and relating them to earlier thoughts. Furthermore, he noted that as the concepts we speak about become increasingly more abstract "language becomes an instrument of reasoning in the true sense of the word" (Oller & Omdahl, 1994, p. 244). Jean Piaget, a Swiss psychologist, concluded that an important connection exists between language and intellect. In his research he found that a person's mental capacities would suffer if language was not acquired by a certain age (Oller & Omdahl, 1994).

"The National Council of Teachers of English 'Essentials of English' statement holds that teaching of creative, logical, and critical thinking is close to the core of effective English instruction" (Suhor, 1985, p. 2). Charles Suhor, the National Council's deputy executive director, places great importance on the relationship between language and thought.

> The English language arts, pre-K through college, inherently involve a wide range of essential thinking skills because of the close relationships between thinking and language as established by Piaget, Vygotsky, Luria, and others. Additionally, many aspects of reading and writing are pertinent to important thinking skills. (Suhor, 1985, p. 2)

The primary reason why such a great emphasis on the teaching of thought is placed upon the English teacher is due to the "centrality of language," as Ernest Boyer (1983) described. This phrase refers to the importance that language has in every discipline of study. Without the use of language and the ability to express and understand thought through language, learning would be highly superficial, if not impossible. Language, thinking, and learning appear to be inseparable (Suhor, 1985).

This paper certainly does not intend to propose a solution to the age-old problem of the relationship between language and thought. Whether or not a language teacher believes that a person can have clear thought without being able to express it in language is not a major point of concern for this paper. It is relevant though to briefly mention that when learning a second language the necessary dependency between the two capacities is believed to increase. Although scholars often hold that verbal mediation is not necessary for some types of abstract thought, many believe that when learning a new language, "the verbal mediation of thought processes is necessary" to a greater degree (Barnes, 1985, p. 141).

Furthermore, in order to claim fluency in a language, a person must be able to think in that language. By giving the example of a singer who can sing a song in a foreign language perfectly but cannot understand a word in the language, Diller claims that "we cannot say we know a language until we can think in it" (1978, p. 34). The task of thinking presents a big challenge, but the ability to understand and interpret messages and express one's thoughts in a second language is an even more difficult task. Due to this difficulty, Diller notes that second language learners often need "guided practice in thinking" in order to be able to really use a language (1978, p. 35).

Mentioning some of the basic issues concerning the relationship between language and thought are necessary in seeking to establish the important role critical thinking instruction should play in the second language classroom. Due to the belief that language is perhaps the most important medium by which thought is expressed, it is extremely important that the language teacher be concerned with the interface between language and thought. As people's language skills develop, their thinking skills need to develop as well because the two skills appear to depend upon one another in order for either to function at a higher level. Both these skills, language and thought, can and should be taught. Just as good language skills will not develop without effort from both learners and teachers, good

thinking skills will not develop without energy expended by both parties. Language and thought are considered intimately related to one another. The importance of the relationship between the two capacities should not be forgotten or ignored in the second language classroom.

2. WHAT IS CRITICAL THINKING?

Definitions of Critical Thinking

Numerous educators today discuss the need for teaching critical thinking, but there are a variety of ideas about what critical thinking really means. Attempts to define critical thinking have proven to be quite a challenging task (Johnson, 1992). To some, critical thinking can be equated with independent or unique thinking where there is no standard or "correct" answer (Li, 1996). In his discussion of critical thinking, W. G. Perry, author of the book *Forms of Intellectual and Ethical Development in the College Years: A Scheme*, says that critical thinking takes pluralism (that no idea is ultimately right or wrong) as a given (1970).

Perry developed a four-stage model of what he considered increasing intellectual development in one's beliefs about knowledge. The first stage sees knowledge to be merely a collection of discrete facts. The second stage is when one recognizes that conflict will occur in beliefs and doctrines and begins to allow for the existence of doubt and subjectivity in some areas of knowledge. "When no absolute truth exists, one 'opinion' is as good as another, and teachers 'have no right to call [the student] wrong' on matters of opinion" (Perry, 1970, p. 97; cited in Kurfiss, 1988, p. 54). While the recognition of differing beliefs is an important step in developing critical thinking, at this level students have no means of evaluating the various beliefs except to rely on a certain feeling (Kurfiss, 1988). Allan Bloom describes these students as suffering from the "'openness of indifference'. Openness used to be the virtue that permitted us to seek the good by using reason. It now means accepting everything and denying reason's power" (1987, p. 41).

Perry's third stage is when students realize that there are varying levels of quality in opinions. Reasons must support good opinions. The fourth, and highest stage of intellectual development as described by Perry is that of commitment in the face of relativism. According to Perry students must choose to believe something even though they can have no assurance outside of themselves as to the correctness of their belief (Kurfiss, 1988; Perry, 1970). Unfortunately, this very popular definition of critical thinking and its pervasiveness in the university, as well as in ESL classes, has not resulted in students who intelligently examine their beliefs and desire to continually improve their epistemic situation, but rather in students who confidently and wholeheartedly attempt to justify their own beliefs no matter what basis they have for holding those beliefs. In her book on critical thinking, Joanne Kurfiss reports that even after four years of college education students continue to "make judgments on the basis of unexamined personal preferences (1988, p. 1).

Other authors who write about critical-thinking theory capitalize on the reflective and explorative aspects of critical thinking in their definitions. In John Dewey's classic book, *How We Think*, he used phrases such as "suspended judgment" and "reflective thought" to describe critical thinking (1982, p. 74). He wrote that the essence of critical and reflective thought involves "active, resistant, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it" (1982, p. 7). Joanne Kurfiss laid out the following definition of critical thinking: "An investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that can therefore be convincingly justified" (1988, p. 2).

In a chapter written on the challenge of defining critical thinking, Ralph H. Johnson wrote five definitions that scholars have given:

a. Ennis's definition of critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do" (1987 , p. 10);
b. McPeck's definition of critical thinking as "the skill and propensity to engage in an activity with reflective skepticism" (1981, p. 81);
c. Richard Paul's . . .definition of critical thinking in terms of a list of perfections and traits of thought: "critical thinking is disciplined, self-directed thinking which exemplifies the perfection of thinking appropriate to a particular mode or domain of thinking" (1989, p. 214);
d. Lipman's account of critical thinking as "skillful, responsible thinking that facilitates good judgment because it (1) relies upon criteria, (2) is self-correcting and (3) is sensitive to context" (1988, p. 39);
e. Siegal's definition of the critical thinker as the individual who is appropriately moved by reason (1988).

Though all the above definitions regarding the meaning of critical thinking would probably all agree that "the essence of critical thinking skills is the willingness to challenge old assumptions and examine alternatives" (Olson, 1992, p. 3), most of these definitions either fail to address, or overtly dismiss the possibility of correct thinking, which is the very reason for the value of critical thinking. As stated earlier, if correct thinking does not exist then critical thinking has very little value. Change in one's beliefs and assumptions for the purpose of change itself is worthless, but change in one's beliefs and assumptions for the purpose of improving one's epistemic situation is valuable beyond measure because and only because correct thinking and true beliefs are possible.

Classroom Instruction

Now that several definitions of critical thinking have been explored, this discussion will turn to an examination of theories and methods that address the issue of what critical thinking instruction means in the EAP classroom. The first issue is that of whether critical thinking should be taught as an isolated skill--a separate class of its own--or if it should be integrated into each discipline, or even into each classroom? While there are several important aspects involved in the discussion of this issue, theorists agree that ideally critical thinking would be integrated into every teacher's classroom instruction (Suhor, 1985). Unfortunately, this is not usually the case, as a result many colleges are trying to find other

options by which to provide students with the necessary training they need to develop their critical thinking skills. Most often this means creating a special class specifically designed to teach critical thinking.

Scholars agree that teaching isolated classes which are solely devoted to the development of critical thinking skills can be profitable for the students, but it is not sufficient. There are two primary reasons for this belief. One reason is that developing critical thinking skills is a long and difficult process; teachers cannot expect students to have "arrived" after one course in critical thinking. Students need constant challenge and encouragement from all their teachers. What often happens when one specific course is designed to teach critical thinking skills is that other teachers end up "passing the buck", assuming that instruction in that area is somebody else's job, and not striving to integrate critical thinking instruction into their courses. This is not to say that courses solely devoted to teaching critical thinking are not beneficial, but teachers must acknowledge that it is every teacher's job, even the ESL teachers', to develop the critical thinking skills of their students.

The second reason why courses in critical thinking are not sufficient is that there is a great assumption made when teaching skills independently, that the skills will be transferred to other disciplines of study (Meyers, 1986). However, recent studies suggest that little carryover is made between understanding the skills of logic and critical thinking and then actually applying them to other disciplines (Hudgins, 1978; McPeck, 1981). While there are general skills in thinking that are necessary across the disciplines, each teacher must be involved in encouraging students to transfer their knowledge and skills to each subject area as well as working to develop the necessary discipline-specific skills. Edward DeBono, who developed a thinking skills program, "claims that 'generalizable thinking skills' can and should be taught, in addition to 'local skills' required in particular subject matter areas" (Suhor, 1985, p. 1). This information implies that ESL teachers need

to be concerned with teaching the particular skills that thinking critically in a second language will require.

Suhor addressed the need for all disciplines to value the teaching of critical thinking skills. He wrote, "no discipline can claim exemption from many of the mental processes that the advocates of isolated instruction in thinking skills see as generic" (Suhor, 1985, p. 2). The danger that educators need to beware of though, is to not assume that because students have a specific critical thinking class that educators are no longer responsible for teaching critical thinking within their own class and discipline. ESL teachers may face the dilemma of whether or not to allow poor thinking to slide in their classes, assuming that their students will take a critical thinking class in the future. "Simply installing a course devoted to the subject is the simplest method, but it may lead to complacency amongst the faculty who assume that the problem is being taken care of in another course. . . It needs to be incorporated in all courses" (Kurfiss, 1988, p. 92). Chet Meyers agrees, "Just as students will not become proficient writers merely by taking a year of composition but must be required to practice good writing in all their classes, so students will develop good critical thinking skills only by being challenged to practice in all different subjects they study" (1986, p. 5).

With recent reports being published claiming that colleges are failing to educate students (Honan, 1993), addressing the need to teach critical thinking is becoming one of the most popular topics of discussion amongst educators. There are a great number of conferences these days about critical thinking, especially at the university level (Kurfiss, 1988). The emphasis on this skill in western colleges and university will most likely continue to grow, and EAP teachers need to be preparing their students for this reality. Colleges are experimenting with a wide variety of methods to satisfy the need to develop students who think critically. Many colleges are now beginning to require that students take courses in critical thinking, or logic prior to graduation (Meyers, 1986). Other schools

such as St. Joseph's College in Indiana offer what they call a CORE program where students are given lectures from a number of different faculty from various disciplines and challenged to integrate their learning and question accepted views (Kurfiss, 1988). Most often, however, critical thinking is left to a freshman orientation class on study skills or the freshman English teacher (Kurfiss, 1988, p. 92).

However one's college has chosen to formally address the need to develop critical thinking, all teachers should strive to integrate critical thinking instruction into their own classrooms. What does critical thinking instruction entail? How can it become a part of the EAP teacher's classroom? While Part II of this paper will go into detail on the practical components of teaching critical thinking, this next section will outline the basic theories about what critical thinking involves.

Making Critical Thinking a Part of the EAP Classroom

Too many teachers today opt for the easier task of presenting information to their students rather than showing their students how they arrived at their conclusions. This is not how education used to be. Meyers explains:

> Many of America's earliest colleges were conceived with a dedication to develop certain character traits and habits of thought, but more recently the aims of higher education have drifted toward the mastery of academic content and information. Contemporary American educators have tended to assume that content comes first and thinking processes develop later. (1986, p. 54)

Unfortunately, to assume that if provided with sufficient knowledge thinking skills will develop naturally later on, is often an unrealistic expectation. Kurfiss explains the irony that frequently exists amongst professors. She writes, "educators in every discipline value critical thinking skills of one form or another." However, she goes on to explain the problem that exists. "Students rarely witness the process by which their professors arrive at certain conclusions. Although their professors value these skills they rarely teach them. Although they require them in assignments they don't show students how" (1988, pp. 3-

4). Throughout the semester students need to be shown how to think critically. They need to be given assignments periodically that require critical thinking. Professors need to be providing continual feedback to their students about how the students' critical thinking skills are developing. "Traditional term papers demand too much of the student too late in the course. Critical thinking skills need to be practiced throughout the course in order to be learnt" (Meyers, 1986, p. 71).

One model that EAP teachers can use to show students how they, as teachers, do thinking and what they expect of their students is the cognitive apprenticeship model which Dwight Atkinson describes in his article, "A Critical Approach to Critical Thinking in TESOL" (Atkinson, 1997, p. 87; based on Collins, Brown, & Newman, 1989). This model, based upon the Vygotskian learning theory, involves three basic components: modeling, coaching, and fading. This model initially allows students to follow and use very clear and specific expert guidance and after detailed feedback and time the guidance is slowly faded out (Atkinson, 1997). The model allows students to actually see how critical thinking is done by the experts. Perhaps following a model such as this in the classroom would be beneficial both to teachers and students because it would help teachers make their thinking processes more explicit and it would help students to see how thinking is actually done.

For the experts, critical thinking is so natural that they often do not even realize all that is involved in analyzing and synthesizing a great deal of information and reaching logically inferred conclusions. Hunt describes the difference between novices and experts.

> When novices in any field attack a problem, they develop a hypothesis and follow a lead until it results in a dead end. Then they backtrack and start over with another approach. Novices also typically have difficulty prioritizing issues and sorting out variables; they act as if all considerations have equal importance. The experts, on the other hand, quickly identify central variables, eliminate noncrucial considerations, and, drawing on their vast previous experience of related problems, formulate an analysis. (Meyers, 1986, p. 12; based on Hunt, 1982)

It is often very difficult for teachers to explicate how they do critical thinking (Meyers, 1986). Teachers need to provide students with models of how to structure the knowledge they are learning and how to ask questions about it. In researching what goes on in the mind of the learner, Norman found that students will provide their own framework as to how to understand the material if the teacher does not show them how. If teachers desire students to use and develop certain analytical skills, they had better help the students learn how to analyze and understand the material. According to Norman, it is "essential to provide the prototype model for the students . . . If you as a teacher do not provide the model, the student is likely to pick one anyway, and if you are to have any control in the situation, it is best for you to have made the selection" (1980, p. 44).

There are many benefits and challenges involved in not only providing students with knowledge, but with opportunities to learn and use thinking skills as well. Henri Nouwen wrote, "It is so easy to impress students with books they have not read, with terms that they have not heard, and with situations with which they are unfamiliar" (1966, p. 61). However, he went on to describe, it is much more difficult to show the students how to do the work themselves and to use their own talents and intelligence (Nouwen, 1966). Teachers must be examples to their students of how critical thinking is done, and they must guide their students, through having them practice and giving them feedback, towards becoming critical thinkers themselves.

Challenging the Students

Students need to be challenged. Unfortunately, students do not face adequate challenges in the classroom often enough. In a research study on academic instruction, it was noted that often classroom practices tend to underestimate the capability of students. The researchers found that it is not unusual for instructors to postpone more challenging and interesting work indefinitely, or to fail to provide their students with contexts which

necessitate the meaningful employment of the higher skills they teach (Scales & Burley, 1988). Naturally then, because their teachers have low standards and expectations, students will perform at levels far lower than their capabilities.

Unfortunately, this phenomenon is not a stranger to the EAP classroom. It is not uncommon for ESL students to look back upon the intellectual demands that were placed upon them in their EAP classes and wish that they could have had the benefit of being presented with more challenging material and assignments. For example, Leki and Carson conducted a research project on EAP writing instruction. In their survey they asked students who had already moved from their ESL classes into their regular university classes to reflect on their EAP writing courses. They found that 18% of the students felt that their EAP writing courses were "too easy, too superficial, and not challenging, sophisticated, or college-level enough" (1994, p. 92). Though the students did feel that the classes helped prepare for most of their tasks that would be required in the future, one area in which they felt inadequately prepared was in the writing of documents that require "finding, selecting, and synthesizing sources" (1994, p. 92). They also expressed a desire for "more intellectually stimulating and demanding subject matter" (1994, p. 93). One reason why presenting students with intellectually stimulating subject matter has often been a problem for foreign language teachers in general is that often educators use texts that have been rewritten, or written especially for second language students. These texts are written, or rewritten to reflect the theoretical concepts at a level which the L2 student is thought capable of handling. However, often the result is that "not meaningfulness but sentence length and syllable counts become the decisive factors" in choosing foreign language material (Swaffer, 1986, p. 80).

Presenting students with challenging tasks may also help increase the motivation of both teachers and students because more energy must be invested into the learning experience. Choosing to deal with difficult, intense, or controversial topics and subject

matter also aids in increasing classroom motivation because people are willing and desire to expend time and effort on things that they consider important and worthwhile. When students have motivation to learn, they are likely to want to work harder and learn more than if their motivational level is only minimal (H. D. Brown, 1994).

All this is not to say that EAP instructors should be hard-core, the material overwhelming, and the grading nearly impossible; rather, it is to point out that the capabilities of students are often underestimated. Furthermore, choosing difficult and challenging materials and tasks is usually quite advantageous. Teachers always have to struggle with the precious balance between challenge and support. Perhaps it is the ability to discern this fine line that distinguishes a good teacher from a great teacher.

Three Necessary Components

There are three primary components to critical thinking: understanding, synthesizing, and analyzing. However, the lines between the three components are not clearly marked and the reader should notice that there will necessarily be a continual interaction between the three areas.

Understanding.

It would be far beyond the scope of this paper to discuss the numerous theories regarding the nature of understanding. Without trying to discredit specific theories about the nature of understanding and where meaning is made, for the purpose of simplicity and direction in this aspect of critical thinking, this section will refer to understanding a text only in the sense of helping a student to understand what is written in the text. This involves going beyond simply helping students understand the literal definitions of every word within in the text. There is clearly more to understanding than this because a common complaint of ESL students is that they know the meaning of every word in a text,

but they still do not understand the meaning of the text itself. Part of making sense of a text involves realizing the relationships between the information and how the author put it all together.

At this stage of the critical thinking process it is extremely important that ESL teachers encourage their students to sincerely seek to understand what the author is communicating in a text without judging it prematurely. Perhaps, as it is often argued, it is impossible to avoid making judgments or reading one's own biases and interpretations into a text. David Birch (1990) argues that understanding a text naturally requires interaction, interpretation, and criticism because he believes that texts themselves have no fixed meaning. Birch claims there is never a right, correct, or complete interpretation of a text. However, even if texts do call for a certain amount of inferencing and background knowledge, as will be discussed in the next section, that is not to say that the text had no specific meaning intended by the author. It is one thing to say that as a result of one's present context, background knowledge, or for some other reason , one cannot fully understand the intended meaning of a text; it is a far different and more dangerous claim to assert that no "correct" interpretation exists. The essence of this discussion is far too great for this paper, but the position taken here is that the author did write with a certain understanding of a message that he intended to pass on to the reader. In order to be able to think critically about a text it is important to at least make a sincere effort to understand the author's intended message.

Promoting this effort--to understand the author's intended meaning--among students who are just learning the skills of critical thinking is absolutely crucial as they may have a difficult time separating their thoughts about a text from what a text actually says. It is often difficult to convince students of the need to carefully read a text in order to understand what the author is trying to convey. This is because it is often much easier to make immediate interpretations and judgments about a text before seriously considering

what an author has to say. Joanne Kurfiss warns of the challenge this skill usually presents. "Persuading students to weigh information objectively poses a far more perplexing challenge to teachers than does teaching them how to retrieve it" (1988, p. 45). Understanding what a text actually says is foundational for making solid judgments about, or an analysis of, a text.

ESL teachers must help students understand the material that they expect their students to think deeply about. Often students, especially ESL students, simply do not see, or do not know how to see the basic components that hold a text together and thus fail to make sense of the message the author tried to communicate. Unfortunately, both instructional textbooks and teachers themselves often expect students to see the organizing principles, generalizations, and causal relationships that are basic for understanding a text, without teaching them, or at least showing students how to see these things (Kurfiss, 1988).

Students need to be shown how to prioritize the information in a text. For example, choosing what is important and relevant to the main idea naturally occurs in the mind of a highly-practiced reader, but must be taught to beginning readers (Meyers, 1986).

There are many practical components in teaching students to understand the basic elements of a text. Among the skills and strategies that can be taught are how to do close readings of the texts, create representational models, organize information in a hierarchical format, paraphrase, summarize, and recognize relationships, references, transitions, and information types. The teaching of these various skills and strategies will be discussed in chapter four.

Synthesizing.

The second necessary component of critical thinking is synthesizing. This involves the integration of one's background knowledge, knowledge gained from the text, and one's

inferencing skills, to further one's understanding of a text and to begin an analysis. The role of synthesis is to act as a liaison, allowing a person to move from simply understanding what a text says to inferring what it does not say, and then ultimately, to analyzing all that it does and does not include.

The ability to remember and use relevant background knowledge is necessary not only to further understand the text, but also to analyze the message and conclusions of the text to see if they are logical and true. Background knowledge refers to one's previously acquired knowledge. The role of background knowledge in language comprehension is referred to as schema theory. According to Carrell and Eisterhold, schema theory holds that "efficient comprehension requires the ability to relate the textual material to one's own knowledge" (Carell & Eisterhold, 1988, p. 76). Anderson concurs and wrote that "every act of comprehension involves one's knowledge of the world as well" (1977, p. 369).

Inferencing involves using one's background knowledge and information in the text to fill in the holes and make predictions about what the text does not say. To explain how often this process is used and how important it is when reading, consider the following example. Read the lines from the example text along with the explanations that follow.

> *Mary heard the ice cream man coming down the street. She remembered her birthday money and rushed into the house...*
>
> Upon reading just these few lines, most readers are able to construct a rather complete interpretation of the text. Presumable, Mary is a little girl who heard the ice cream man coming and wanted to buy some ice cream from this ice cream man. Buying ice cream costs money, so she had to think quickly of a source of funds. She remembered some money which she had been given for her birthday and which, presumably, was in the house. So she hurried into the house to try to get the money before the ice cream man arrived. Of course, the text does not say all of this; we readers are inferring a lot of this in giving the text an interpretation. Other interpretations are also possible. Yet, most readers will probably give this text an interpretation quite similar to the one suggested here, and most readers will retain this interpretation unless some contradictory information is encountered. Notice what happens if the reader next encounters the phrase:
>
> *...and locked the door.*
>
> The reader is unable to fit this new piece of textual input information into the developing interpretation. The reader is forced to revise the interpretation in such a

> way as to make this new information compatible with the previous information - to make the whole text cohere. If there were no such thing as schemata guiding the developing interpretation in a top-down processing mode, causing the reader to make conceptual predictions about the meaning of the text, then why would encountering the added phrase cause the reaction it does in the reader? What has happened, we claim, is that as long as the incoming information being processed through bottom-up processing and the conceptual predictions being made through top-down processing are compatible, we have a satisfactory interpretation of the text. When we encounter a mismatch between the top-down predictions and the bottom-up information, we are forced to revise the interpretation in such a way as to make the two compatible once again. In this example, we must revise our interpretation to accommodate the information about Mary's locking the door. Perhaps we infer that for some reason Mary is afraid that the ice cream man might steal her birthday money and that she locks the door to protect it and herself. We believe these two examples vividly demonstrate the existence and operation of schemata in the process of text interpretation. (Rumelhart, 1977, quoted in Carrell & Eisterhold, 1988, pp. 78-79)

The above example demonstrates the process of inferencing and the importance making good inferences has in arriving at a proper interpretation. The practiced reader makes inferences so often and so well that the skill usually does not pose a great challenge. However, the challenge of making inferences should not be underestimated. Inferencing is especially difficult when argumentation is involved. Gillian Brown explains:

> Following the steps of an argument requires an ability to concentrate on verbal input quite unsupported by experience in the physical world, to exercise selective attention on abstract constructs, and, hardest of all, to recall accurately both the constructs and the relationships into which they enter. Moreover, the amount of inferential work that a reader or listener has to do in arriving at an interpretation of argumentative language is only just beginning to be appreciated. (1994, p. 18)

For example, in argumentative language one has to be concerned not only with the meaning of the words, but with the truth of the premises and the validity though which the conclusion has been inferred. The importance of making valid inferences in argumentative language will be discussed in more detail in the following section on analyzing as well as in the analyzing section found in chapter four.

In order to make inferences one needs to access a great deal of background knowledge. Carrell and Eisterhold point out the useful distinction between two types of schemata: formal and content. Formal schemata refer to the background knowledge of the general organizational structures used in various types of texts. Content schemata refer to

background knowledge in the specific content area of the text (1988). By using one's background knowledge about the genre of the text one can expect certain relationships and orders within the text. Theses schemata help readers understand what to do with the information given in the text and how the information fits together.

Content schemata help readers to notice and fill in missing or incorrect details (which works alongside the analysis aspect), and see the relevance and usefulness of the text. Texts are usually written with a specific audience in mind, and authors have certain expectations as to the level of content schemata their readers will have. Oftentimes problems in comprehension occur when there is a gap between the author's expectations and the reader's actual level of content schemata (Carrell & Eisterhold, 1988). This problem is particularly evident in the foreign language classroom due to the culture-specific expectations authors often place upon their readers.

Applying relevant background knowledge not only entails remembering relevant personal experiences and facts, but also deciding what strategies and skills are going to be most helpful in accomplishing a specific task. Often the most valuable background knowledge a teacher can stimulate is procedural knowledge, the knowledge of the how to (Loacker et al., 1984). For example, students may have written a good essay about one topic, but as they begin to write their essays about a new topic they will probably need reminders about the process they used to write their previous essays. Even though students may have already learned a particular skill or strategy, they often need a lot a probing to know when and how to apply the skill.

Synthesizing all of one's available information means that it is important to use both one's background knowledge and the information that is being presented in the text. Some educators are quite frustrated with the great emphasis instructors usually place upon the student's background knowledge. Hee-Won Kang describes one educator's reaction; "The reader is everywhere; the author is nowhere" (1994, p.2). Kang quoted Reed Way

Dasenbrock's frustration with the great amount of emphasis that ESL teachers often place on the students. Dasenbrock argues that too much concentration is given to the knowledge possessed by the students, and not enough on the knowledge the students should be gaining from the texts. Kang concluded, "what we need is a model of reading . . . which redescribes the scene of reading not as a scene of . . . the demonstrations of knowledge already in place, or as a failure of knowledge, but as a scene of learning" (Kang, 1994, p. 2).

Students need assignments that will assist them in synthesizing the information that is presented in the texts, especially when the information is technical and difficult to understand. Assignments that help students to organize their knowledge, and continue increasing it from the information within the texts, will likely result in an increased quality of thinking the students are able to do about the subject (Kurfiss, 1988). Students also need assignments that will help them relate the new knowledge to their previous knowledge. It is often argued that in order to understand and make sense of new knowledge one must be able to relate it somehow to what one already knows (Norman, 1980).

In helping students to put together all the knowledge available to them, students need to be made "aware of the potential for inconsistencies between their background knowledge or inferential elaborations and the information in the text" (Kang, 1994, p. 6). Instructors need to equip their students with tools for recognizing and dealing with such inconsistencies so that instead of ignoring them or distorting the information in the text to fit their mindset (Kang, 1994), they will be able to examine the differences and make changes in their beliefs if necessary. The ability to recognize these inconsistencies is foundational for examining the various conflicting knowledge claims.

As with many things, there is a two-way effect between using background knowledge and applying critical thinking skills. Not only is synthesizing all available

information going to assist a person in analyzing, but according to research, by thinking critically a person will also have more background knowledge accessible in the future. "There is a positive relationship between the amount of thought given to an idea and the probability that the idea will be recalled later. There also seems to be a relationship between the type of thought and the quality of recall" (Schmeck & McCarthy, 1982, p. 11). Schmeck's description of quality thought, or deep processing as he labels it, highly correlates with this paper's description of critical thinking. Russell explains both the effect and the correlation in more detail.

> Deeper processing requires conscious involvement with the material . . . The more that you consciously attend to something, the greater will be the depth of processing. The greater the depth of processing, the more meaningful the material becomes. The more meaningful it becomes, the better the memory. And the better the memory, the more opportunity there will be to make meaningful connections with new material in the future. (1979, p. 105)

Synthesizing all available information means bringing together one's background knowledge and experience, what others say and have written, and new information presented in reading texts in order to examine the various knowledge claims in light of all the evidence. This is absolutely crucial as students seek to produce well thought out, coherent, and persuasive work. Students who fail to consider and deal with views that conflict with their own are not good critical thinkers.

Analyzing.

Analytical evaluation is the essence of critical thinking. Understanding and synthesizing are necessary in order to do critical thinking, but carefully examining the various claims in light of all the evidence with the aim of improving one's epistemic situation is the definition of critical thinking. Therefore, this section and the corresponding analyzing section found in chapter four, address the ultimate goal of critical thinking.

The value in critical thinking rests on the fundamental assumption that one's epistemic situation can be improved. This naturally leads to the question of what improves one's epistemic situation? Improvement in one's epistemic situation occurs when a person alters, or changes altogether, his/her prior beliefs and assumptions because other beliefs and assumptions have been found to be more reasonable, coherent, and true. This leads to the pressing question of what makes a belief true? Or as Roderick Chisholm phrases the question, "How can I distinguish those things I am justified in believing from those things I am not justified in believing" (1989, p. 1)? Even though this is a huge question and cannot be discussed in detail in this paper, it has to be answered or there is no basis for analysis. In order to teach students to analyze, ESL teachers need to have a clear basis upon which a text, or statement, can be analyzed.

Truth is a statement about beliefs. Basically there are two general positions in regards to defining what is true. Either one's beliefs are true because they reflect the way the world is, or one's beliefs are true because they cohere amongst themselves. The later is commonly referred to as coherentism, which provides an epistemic basis for relativism. In Allan Bloom's influential book, *The Closing of the American Mind*, he noted that "there is one thing a professor can be absolutely certain of: almost every student entering the university believes, or says he believes, that truth is relative" (Bloom, 1987, p. 25). Why then, if truth is relative, are students in school? Why are people writing books and papers and giving lectures on their knowledge and beliefs if they really believe that truth is relative? In fact, the very claim that truth is relative is self-refuting. Relativists claim that all truth, except of course the truth of the statement "truth is relative," is relative. The view that everyone's beliefs are equally valuable and correct as long as they cohere amongst themselves, though extremely popular, is clearly in error.

The other view, which acknowledges the existence of absolute truth, holds that a belief or knowledge claim is true if it accurately reflects the way that the world is. This

theory is known as "the correspondence theory of truth." Albert Einstein defined the theory in saying that "a true representation is one that corresponds faithfully to whatever it represents" (Oller & Omdahl, 1994, p. 244). Granted then, that knowledge is that which corresponds faithfully to the way that the world is, how can a person know if a claim accurately reflects the world? This is where an understanding of what epistemologists refer to as *foundationalism* is helpful.

Foundationalism holds that "even if there could be infinite or circular belief chains, they could not be sources of knowledge or justification" (Audi, 1993, p. 207). Though many of a person's beliefs are inferred, such as the inference that the lawn will soon get soaked because it is starting to rain hard, not all beliefs can be inferred. Audi explains the reason for this.

> If knowledge or justified belief arises through inference, it requires belief of at least one premise, and that belief can produce knowledge or justified belief of a proposition inferred from the premise only if the premise belief is itself an instance of knowledge or at least justified. But if the premise belief is justified, it must be so by virtue of *something*--otherwise it would be self-justified, and hence a kind of foundational belief after all. (Audi, 1993, p. 207) [italics in the original]

Audi then goes on to explain that if indeed some beliefs or knowledge claims are justified, then some justified beliefs or knowledge claims must be foundational. That is, they "arise (in a certain way) from experience" (Audi, 1993, p. 207).

Contemporary foundationalism holds that knowledge and justified belief seems to stem from four basic sources: perception and consciousness, both of which fall under the line of rational intuition, and reflection and memory, which fall under the line of logical reflection (Audi, 1993). A justified perceptual belief means, for example, that if a person looks out a window and sees a tree, then the person is most likely justified in believing that there is a tree outside the window. An example of a belief justified because of consciousness would be a person's knowledge that he is currently thinking about running in a race. A belief justified by means of reflection would be the justified belief that if person A is taller than B and B is taller than C, then A is taller than C. Finally, though

justification simply by memory is widely disputed, it means that a person is justified in believing that he ate frozen yogurt yesterday simply by virtue of being able to recall doing so.

The foundationalist has a basis for understanding what does and what does not correspond faithfully with the way the world is. Audi explains, "The foundationalist tends to see experience as a mirror of nature . . . . Some experiences are *produced* by external states of the world . . . and second, that (normally) the experiences in some way *match* their causes" (1993, p. 207) [italics in the original]. Another metaphor that foundationalists use is that of a thermometer. Like a thermometer, which accurately responds to the surrounding temperature, each perceptual belief is a reliable response to the external world (Audi, 1993).

Understanding these fundamental questions and answers is indispensable when teaching and doing critical thinking. Roderick Chisholm concisely states the possibility and importance of knowing how beliefs are justified.

> The ability to ask, "What can I know?" and "What am I justified in believing?" presupposes that one has the concepts of knowledge and of epistemic justification. If I can ask what it is that I know or can know and if I can ask whether I am more justified in believing some things than in believing other things, then I have some understanding of *what it is* to know something and of *what it is* to be justified or to be unjustified in believing something. 'It would be absurd to look for something if one had no idea at all of what one is looking for.' This means that I am capable of at least figuring out what it would be to have an epistemically respectable set of beliefs. (Chisholm, 1989, p. 5)

Foundationalism provides a framework through which to see how a belief might be justified.

The foundationalist holds that beliefs are ultimately justified in any one of the four above-mentioned ways: perception, consciousness, reflection, or memory. Likewise, in the EAP classroom, the good instructor will teach students to analyze the accuracy of the information and conclusions within a text, and help them see if stated claims and beliefs might ultimately receive their justification through one of these four areas. This means that

because students are rational human beings they should be able to more or less trust their perceptions and capacities to give accurate information about the way the world is. Of course, there has been a great deal of skepticism about the trustworthiness of one's epistemic capacities. However, for the purpose of this paper it is sufficient to say that unless one has good reason for doubting his/her epistemic capacities (i.e., a color blind person asked to judge the color of a car) one can generally trust his/her perception, consciousness, reflection, and memory.

Since many of the beliefs a person holds are inferred and not justified in and of themselves through one of the above four areas, a tool through which claims or conclusions can be analyzed to see whether or not they are justified is necessary. The primary tool used for analysis is logic. Norman Geisler and Ronald Brooks, co-authors of the book *Come, Let Us Reason: An Introduction to Logical Thinking*, define logic in the following way. "Logic is the study of right reason or valid inferences and the attending fallacies, formal and informal" (1990, p. 12). Put more simply, logic is "a way to think so that we can come to correct conclusions by understanding implications and the mistakes people often make in thinking" (Geisler & Brooks, 1990, p. 13). Teaching students to think critically about the information and claims in texts necessarily involves helping students understand the principles of logic.

When helping students discover logical principles it is also important to make them aware of the distinction between truth and validity. The validity of an argument is concerned with whether or not the conclusion follows from the premises. However, whether or not those premises and conclusion correspond faithfully with reality, refers to the truth of an argument. In order for an argument to be a good logical argument it must be both valid and true. When an argument is both valid and true, it is usually called a sound argument (Geisler & Brooks, 1990).

Teaching students to think critically by assisting them in discovering logic is often criticized as being too narrow in scope and too theoretical. This criticism has some validity based on education's modern view of logic. The problem, however, is in a person's narrow view of logic, not a problem inherent in logic itself. Notice how the view of logic has changed over time. In the early days of the university, logic was viewed as "necessary to produce graduates with keen thinking abilities" (Meyers, 1986, p. 3). Today, however, logic is seen as "one specialized discipline among many" (Meyers, 1986, p. 3). It seems that in today's modern world the general view towards logic and its necessity has become much more narrow in scope. Unfortunately, this has resulted in a failure to recognize that logic actually penetrates all areas of life. Whether formal logical structures are stated explicitly or not, the principles of logic are used all the time and in every discipline (Geisler & Brooks, 1990). Perhaps the logic used in literature, science, and business is more difficult to uncover than the logic used in philosophy texts, but logic is used in every discipline. The ability to discover the logic that is used in every text and to produce logical work should be a primary focus of university students.

In order to be good critical thinkers and produce quality, sound work, students must be able and willing to examine their own beliefs as well as those of others. "Good thinking requires that one know exactly what he (or someone else) has committed himself to when he (or someone else) made that statement" (Runkle, 1978, p. 3). The examination of one's beliefs, claims, and statements should serve to make the person more confident in beliefs that are true and less confident in those that are false.

The difficulty, however, in examining one's own deeply held beliefs cannot be underestimated. Affective factors that critical thinking involves will be discussed in more detail in chapter three. Although this analysis of one's own logic and that of others is extremely difficult, the positive changes that it should bring to the individual are of great value. Dewey wrote about the intellectual responsibility individuals should have. "To be

intellectually responsible is to consider the consequences of a projected step; it means to be willing to adopt these consequences when they follow reasonably from any position already taken. Intellectual responsibility secures integrity; that is to say, consistency and harmony in belief" (Dewey, 1933, p. 32). Intellectual responsibility involves not only harmony among one's own beliefs, but also consistency between one's beliefs and the way that the world is. Students often fail to examine their existing beliefs and are satisfied with offering a few arguments for a point of view that is compatible with their existing beliefs. This is often referred to as a "make-sense epistemology" (Kurfiss, 1988, p. 46) and is not a part of good critical thinking.

Learning to think critically is difficult work because it involves more than acquiring skills and knowledge. In learning to think critically one must deal "with assumptions about knowledge, truth, authority and inquiry implicit in the process itself" (Kurfiss, 1988, p. 51). Critical thinking instruction is also hard work, but it is important and necessary work, especially within the EAP classroom, as chapter one and two have explained. By helping EAP students discover tools, and sharpen their skills that aid in text analysis, teachers will enable students to profit from the benefits of critical thinking.

PART TWO

PRACTICE

3. AFFECTIVE FACTORS

Critical thinking involves carefully examining the claims and beliefs stated in texts, as well as one's own, to see if they are both valid and true. The goal, of course, is to improve one's belief structure by means of intelligent reasoning. While the reward of gaining increased confidence in beliefs that are true and less confidence in beliefs that are false is great in and of itself, other benefits of continually developing and using critical thinking skills are particularly manifested when the learner is an EAP student. Having good critical thinking skills will be both necessary and helpful throughout the EAP student's future university experience.

Though the need for critical thinking instruction is often clear to the instructors, perhaps the students, especially those who come from backgrounds where critical thinking is not encouraged, will not understand the importance of this type of instruction. Thinking critically is difficult and often uncomfortable work. For this reason it is vital that students be motivated to expend energy developing their skills. It would be helpful to look at the teaching of critical thinking in the EAP classroom through the framework of innovation in the classroom.

Critical Thinking Instruction as Classroom Innovation

Since many EAP students may have never experienced critical thinking instruction and practice before, the whole process may seem like an unnecessary waste of time and energy, too difficult, or even wrong to them. How does one person (the teacher) go about motivating others (the students) to engage in a difficult task if their outlook concerning the

value of the task is of the above-mentioned nature? This is where research in the area of introducing innovation can be helpful. Ron White defines innovation as "a deliberate effort, perceived as new and intended to bring about improvement" (1993, p. 244). The challenge of introducing innovative techniques is no stranger to the field of ESL. Some of the research in this area can be beneficial to EAP teachers who are struggling to help their students catch their vision in regards to the value of critical thinking.

Introducing innovative ideas into a classroom is always going to be a challenge because it will often be viewed as a threat to one's deeply held beliefs and foundational cultural elements (Pennington, 1995). Prabhu notes that "there is always a conflict or mismatch between old and new perceptions and, more seriously, a threat to prevailing routines and to the sense of security dependent on them" (1987, p. 104). If the students come from backgrounds where they have been told not to critically analyze the material they read, and that it is a sign of weakness, or a challenge to authority to question someone or something, then they are not likely to burst forth with a great measure of enthusiasm towards this strange new concept. In fact, most students may be quite resistant to the initial idea of critical thinking instruction. The concept of learning by means of the critical thinking process will probably be a foreign practice to many EAP students. Pennington states that students often view innovation as a threat because it involves, "challenging, ultimately deconstructing, and then reconstructing ingrained practices and long-held beliefs" (Pennington, 1995, p. 707). This challenge will be especially evident in the EAP classroom not only because the students are foreign to the western educational system where these skills are usually valued throughout a person's upbringing, but also because the typical EAP student is an adult who already has a lot of time and energy invested in his practices and beliefs (Meyers, 1986).

Three Steps to Implementing Innovation

Researchers suggest several steps for introducing innovative ideas. These steps include gathering accurate information, promoting awareness of the need, and maintaining clear and frequent communication.

Gathering Accurate Information.

The first step is to gather accurate information. Instructors who hope to have success in teaching students the value and skills of critical thinking should try to gather some information about the students' educational background, areas of interest, and attitudes towards critical thinking. If teachers have a little information about their class, they can have a better idea of where, and how far, to go during the semester. A simple way to do this is to hand out a survey at the beginning of the semester. Of course, surveys cannot be 100% accurate because often people will say one thing and then do another (Holliday, 1992), but they can be quite helpful in giving teachers a general idea about their students. A sample survey has been provided (see Table 1).

Though teachers will have to adjust their surveys according to their specific classes, the sample provided gives some ideas of the types of questions that can be asked on the initial survey. The sample questions seek information about the student's background, reasons for choosing to study at an English speaking university, expectations for the class, beliefs about essays, and special areas of interest.

Table 1

Student Survey (Reading/Writing)

Name: _____

What country are you from?

Why do you hope to attend an English speaking university?

What skills do you hope to learn in this class? (Circle all that apply)

summarizing	paraphrasing	reading faster
analyzing	predicting	writing persuasive essays
recognizing author bias	researching	questioning
critical thinking	inferencing	essay organization
vocabulary	grammar	other: _____

What do you think makes a good essay? (Number 1-5 in order of importance. 1= most important, 2 = second most important, etc.)

good organization _____

good reasons and examples _____

correct grammar _____

clearly stated ideas _____

coherence/ unity _____

What topics are you interested in? (Circle the five that interest you most)

technology	medicine/ health
history	moral issues/ ethics
nature/ environment	sports
music	education
world events	other: _____

Promoting Awareness of the Need.

The second step that teachers should take in their hopes of successfully introducing critical thinking instruction into their classrooms is to establish an awareness of the need that exists for its instruction. ESL teachers need to make it clear to the students why it is important to learn these skills. A strong case for the necessity of learning these skills can be made if EAP teachers simply concentrate on the fact that these are skills that their future university professors will expect them to have. However, students need to be told and shown that the reason they are doing specific things in their EAP classes is to prepare them for their future. It cannot simply be assumed that EAP students understand that what they do in their EAP classes is actually preparing them for their future university study in more ways than simply learning English grammar.

The most important part in creating an awareness of the need, however, is to help students understand that these skills are important not only because their future teachers will expect them to have these skills, but because these skills have value in and of themselves. Critical thinking is a valuable tool. During the first few days of the semester, it is probably sufficient to tell the students that it will be necessary for them to develop critical thinking skills for their university education. However, as time goes on teachers must seek to create a deeper sense of the need that exists.

In order to establish the real value of critical thinking, teachers may need to address their students' fundamental beliefs about the purpose of education. Teachers should challenge their students with this question. Is the purpose of education simply to learn basic facts or is it to learn how to reason (and/or think)? Jonathan Fife explains, "If education is only to teach basic facts, then critical thinking plays only a minor role and rote learning is sufficient. If, however, the role of education is to develop greater reasoning skills in order to cope with, and make decisions about life and society, then critical thinking

plays a central position, since reasoning is impossible without critical thinking" (Fife, 1988, p. xv).

Perhaps the best way to teach students the value of critical thinking is not to tell them, but to show them. Teachers can begin by making students aware of the critical thinking that they already do every day of their lives. For example, a student listens to the weather on Tuesday night and the weather man says, "Wednesday will be a clear day." Then on Wednesday morning the student wakes up and looks out the window. Thinking s/he would see the sun shining, the student is surprised to see that it is raining outside. The student then walks out the door with an umbrella. Though this example may sound simple, the student has just demonstrated the use of critical thinking in order to make a decision. The student experienced conflicting reports from the Tuesday night weather forecast and her/his perception on Wednesday morning. In light of the situation s/he had to use her/his reasoning abilities and decide what was true: the weatherman's report or her/his perceptions. Based on the decision to take an umbrella (an inference--that if it is raining s/he will get wet unless an umbrella is taken), it seems clear that the student decided that it was more reasonable to trust her/his perception than the Tuesday night weather man.

This example shows how important critical thinking skills are everyday. The student in the example had to make a decision about whether to take an umbrella or not. This decision may seem quite easy, but the whole process can get deep quite quickly. The decisions people make and the processes they use to make those decisions are vitally important. Teachers need to show students the deeper and more difficult critical thinking that must be done to arrive at other types of conclusions. Rather than opting for the easier task of just presenting knowledge to the class, teachers can demonstrate how knowledge is determined and how truth is discovered. Teachers should often show students how conclusions have been and can be reached. They also need to allow students time to practice arriving at logical, true conclusions on their own. Examples of how to do this will

be given in chapter 4. However, students need to build up confidence and trust before they will be willing to invest in something that they are not used to, so teachers must remember to start simple and then move to more complex situations.

Malone (1981) suggests three factors that can arouse students' intrinsic motivation: curiosity, challenge, and fantasy. A teacher who tries to bring these factors into the classroom may help students feel the need and desire for critical thinking instruction. These factors can easily play a part in the classroom.

> Curiosity is aroused when students experience inadequacies in their knowledge. Challenge requires personally meaningful goals, uncertain outcomes, and difficulty levels and feedback that enhance rather than damage self-esteem. Fantasy intrinsic to the subject (as in a game that presents realistic problems and naturalistic feedback) enhances both learning and intrinsic motivation. (Malone, 1981, quoted in Kurfiss, 1988, p. 47)

Many educators have found that one way to effectively use these factors is to use controversial, complex issues that students care about (Paul, 1986). Students need to actively struggle with real problems, and see that their instructors do the same. When courses provide opportunities for students to come face to face with the differing ideas of authors and other students, many times students are forced to rethink their ideas. Why do they hold a certain belief? What is the correct position? Students who discover that they have no grounds for their beliefs often realize that they must either find new justifications or revise their own beliefs in the light of better arguments (Kurfiss, 1988). The teacher can then show the students how critical thinking can provide students with the tools and a framework for what needs to be done.

Maintaining Clear and Frequent Communication.

One of the primary keys to maintaining the balance between challenging and supporting the students is to have continual communication. Being taught to think critically will probably be an instructional change for students, and they will need to be told and shown explicitly about the purpose, value, and grading of critical thinking. Everard and

Morris (1985) agree that communication is vital. They explain that students need to have a clear picture of what critical thinking will mean for them. What will it cause them to do differently? How will critical thinking be evaluated? Clarity will grow through continual dialogue and questioning.

Teachers need to continually show and tell their students what they want them to do. This means that students need very clear instructions, guidance, and feedback. One way to focus on clear communication is to use the cognitive apprenticeship model of teaching as described by Collins, Brown, and Newman (1989). This model was described in chapter 2, but to quickly review, it involves modeling, coaching, and fading. The model is based on Vygotskian learning theory which holds that with some assistance learners are able to perform at a level higher than their actual level. This model allows students to see what critical thinking involves and what the result of critical thinking can look like. It also helps them to gain confidence in what they are potentially capable of doing. Clear communication and personal attention are fundamental to this theory.

One way to practice this theory in the classroom is to give the students writing templates. Teachers who use templates for clearly communicating what they want their students to do have experienced notable results (Velis, 1997a). The templates are basic frames students can use to help them organize their thoughts and write them in a clear format. Often teachers will give their students a sample model of a completed template. Then the students will only be given the basic frame work and they will fill in the template with their own writing about the given topic. Teachers will then coach their students along through feedback on the various drafts, essays, and improvements the students are making as well as the areas in which they need additional work. Over time the assistance will fade out as the student learns to do more and more on his own. A sample template has been provided (see Table 2).

Table 2

Sample Template

Basic critical summary format

The author takes a (state position on issue)_____

_____

_____

He supports his position by noting that _____

_____

He illustrates this point by_____

_____

Furthermore, he substantiates his position by noting_____

_____

_____

The author draws an analogy between (X and Y)_____

_____

His main point is that (In summary, the author has built a case for X)_____

_____

The argument of the author was (give your evaluation: well-reasoned, weak in that . . ., essentially flawed). Support your position - did you support or reject the author's argument? Which of his premises did you find most compelling?

(Source: Velis, 1997b, p. 1)

The following is a sample of what a thirteen-year-old, female, ESL student was able to produce with the aid of a template and coaching.

> Another point of opposition for the woman's right over her own body is that this abortion rights argument is guilty of special pleading. He [Beckwith] backs up this point by demonstrating that when the abortion rights advocate appeals to a woman's right to control her own body while ignoring the possibility that this control may entail the death of another, he is guilty of selecting principles that support his position while ignoring principles that conflict with it. For instance, when a smoker smokes in a small area, although he has a right to control his own body, it causes the nonsmoker to be ill, and this is ignoring the nonsmoker's right to control his own body. Overall, I found his case convincing because certainly a fetus is not a part of a woman's body, and "no one's right to personal autonomy is so strong that it permits the arbitrary execution of another." (Velis, 1997a, p. 93)

Through clear communication of the instructions and expectations, thorough modeling, and systematic coaching, students can produce high-quality, critical writing.

A second area where communication must be explicit is in the relationship between the course goals and the daily classroom procedures (Krashen & Terrell, 1983). Students may have a difficult time making the connection between a particular task or skill and a potential learning outcome. If students do not see that value in a particular task they probably will not work at it very hard, and most likely they will not get very much out of it. By simply giving the students reasons why the class is doing something, teachers can make a difference in the attitudes of the students and in their learning outcomes.

Another area in which clear communication is absolutely crucial is in the grading system. If critical thinking is going to be a key focus of the class then presumably there will be some grading based on the students' critical thinking. Normally, critical thinking will be graded as a subskill of a more holistic task such as writing an essay, for example. The grading of critical thinking usually presents a challenge to teachers, and students often have difficulty understanding or accepting why and how a teacher arrived at a particular grade for their critical thinking. There are several ways instructors can try to lessen the confusion.

The first way is to continually reiterate to the students that there is a great deal of objectivity in the critical thinking arena. As stressed before in this paper, there is such a thing as correct thinking. Students who have arrived at conclusions through building sound arguments demonstrate that they know what is involved in clear thinking. However, students who fail to use all the available information, or alter information, and draw conclusions that do not logically flow from the premises are probably not thinking clearly. The teacher should be able to point out specific areas in which a student needs improvement. Hopefully, as the students grow in their understanding of critical thinking, they will also be able to discern a good critical thinker from one who is not so good.

The second way to try to lessen the grading confusion is to clearly communicate to the students the grading criterion that will be used. Students need to see and understand beforehand exactly what their professor is looking for. The specific grading criterion should be handed out and explained to the students before they begin their assignments. Teachers should even "illustrate the criterion in specific examples of students' work" (Kurfiss, 1988, p. 87). Anything that teachers can do beforehand to help clarify in their own minds the reasons for the grade they give, and to help lessen the confusion students have about the grades, will be very helpful in explaining to students the grading process. There is bound to be a student who will challenge a grade, especially in a difficult area such as critical thinking. However, if teachers have clear, specific criteria laid out ahead of time that they can point to, hopefully the grading controversies will be minimal.

In conclusion, critical thinking instruction will often seem innovative in the EAP classroom. Research and methods about how to introduce innovative ideas into the classroom were discussed to show how the innovative idea (innovative to the students) of teaching critical thinking in the EAP classroom might be implemented successfully. The three steps to successful implementation discussed were gathering accurate information, promoting awareness of the need, and maintaining clear and frequent communication.

Value Neutrality

Since the position of this paper is likely to be highly controversial amongst both faculty and students, the issue of value neutrality in the classroom should be discussed. Many times opponents to both the traditional ways of teaching critical thinking and the idea that correct thinking exists, argue that when teaching students thinking skills teachers are more often concerned with teaching students what to think rather than how to think (Villanueva, 1993). This accusation is probably correct, but it is not anything to be ashamed of. After all, it is the role of the educator to guide students towards that which is true and to help them develop the skills which will allow them to discern for themselves what premises are true and what conclusions are valid. If the goal is to help students learn to think well, then the educator must show the students how this can be done. It seems that teaching students how to think cannot be separated from teaching them what to think.

Teaching students how and what to think is not anything to be ashamed of when true, accurate beliefs are the goal. Helping someone learn how to improve their noetic structure (i.e., hold more true and coherent beliefs) is a very worthwhile task because there is such value in having true beliefs both practically and theoretically (Runkle, 1978). Baron explains why teaching students how and what to think is of great importance where truth is concerned.

> Why have true beliefs as opposed to false ones? True beliefs, and accurate probabilities may be helpful in accurately foreseeing the consequences of actions and plans, hence, in choosing plans that will succeed, so as to maximize utility as determined by those plans. The value of such foresight may seem limited when viewed from the perspective of narrow self-interest, for which little knowledge may be required (relative to the knowledge that schools and colleges routinely try to import). But when plans concern themselves with the long-term welfare of society or humanity, for moral reasons, the practical value of knowledge . . . is considerable.
> Second, the attainment of true beliefs and accurate probabilities could be a goal in its own right in each of our plans. If there is such a goal--and there is every reason to think that people are innately curious--it would be worthwhile for the educator to encourage its development, because of the other benefits of having accurate beliefs. Traits that lead to accurate beliefs are traits that we would want to encourage in ourselves and others, regardless of our other ends or theirs. (Baron, 1985, p. 80-1).

Furthermore, it is an impossible expectation to tell a teacher that he should completely separate the teaching of how to think from the teaching of what to think. This is because research suggests that value neutrality, which is essentially what this boils down to, is not possible in the classroom. In fact, "The very supposition of being values neutral is based on a value and therefore is not neutral" (Poulshock, 1989, p. 11). Poulshock explains that teachers cannot remain completely neutral; simply by the materials and methods they choose teachers will be communicating their values. Every action and every choice a teacher makes implies certain values. Since value neutral education is not possible, Poulshock (1989) suggests that both teachers and students be genuine and honest about their values instead of always trying to cover them up and pretend like the classroom is value-free.

Kurfiss addresses the fact that most educators feel reluctant to discuss moral and ethical issues in the classroom (1988). However, she notes that when teaching critical thinking one cannot avoid questions about values. Kurfiss holds that if critical thinking is going to influence behavior, it must address the points of intersection between a person's professional and private lives. "Teaching students technical skills to achieve goals while excluding discussion of the values those goals imply reduces critical thinking to a narrow set of technical skills, violating a fundamental purpose of instruction in critical thinking" (Kurfiss, 1988, p. 69).

Kurfiss even speculates about the possibility that the reason moral development lags behind intellectual development is largely due to the reluctance educators have towards engaging students in ethical deliberations. She writes that when instructor's show such reluctance "they reduce the probability that students' knowledge will influence their personal and professional actions toward rational, socially, and responsible ends. To the extent that a wider, developmental view of critical thinking is adopted, the prospects for greater intellectual and ethical maturity of college graduates will be greatly improved"

(Kurfiss, 1988, p. 70). The fact that values cannot and should not be avoided in the classroom does not mean that instructors should use their authority to insist on their own particular view. Rather, teachers can ask questions which prompt the students to talk about their own values, beliefs, and assumptions and then encourage the students to evaluate their beliefs in terms of coherence and consistency. Though teachers may approach values interaction in their classrooms differently, it is important that teachers not try to avoid the fact that everyone holds certain values, beliefs, and assumptions and that these beliefs have an important role in the critical thinking process.

4. PRACTICAL APPLICATIONS

Although the authors of many ESL reading/writing textbooks have incorporated critical thinking instruction into their materials, teachers need to be able to discern the quality and extensiveness of a particular text's coverage so that they will not omit any important component which the text fails to cover. In order to do this teachers must be aware of what critical thinking instruction actually looks like in practice. This chapter will discuss the skills that are necessary for thinking critically and show examples of how the skills could be taught. (See also Appendices A and B which are tools for evaluating critical thinking instruction in textbooks).

Understanding

Before students can think critically about a text they must be able to understand the meaning of the text. This section will explore some possibilities for helping students understand the author's intended message of the text. The purpose of this step towards critical thinking is that the students might be able to take a sincere look at what the author is really trying to say. The focus is not whether or not the student agrees with the author, but rather, it is on what points the author makes and how the ideas in the text are developed. This following section will focus on some of the skills and methods teachers can use to help students understand texts.

The Unifying Topic

Students need to learn to recognize the specific unifying topic around which all the material is centered. Once students recognize the unifying topic teachers can help students understand the author's pattern of organization as well as how each idea and section relate to the topic. Helping students find the topic sentences and key words will help them to understand the relationships between the various parts of a text. Finally, by showing students how to construct a diagram or outline, teachers can allow students to put together a visual representation of the relationships and hierarchy of ideas presented in the text.

The first step students should take in seeking to understand a text is to look at the title, subtitles, or pictures. What is the text about? What is the topic? It may be helpful to simply point out to students that the text will be centered around a specific topic, and all the information in the text should relate somehow to that topic. One of the student's primary tasks is to figure out the relationship between the information in the text and the central topic. Activities such as the following can give students practice in doing this.

Directions: Circle the word which is the best topic for all the other words.

hose	wheelbarrow	garden equipment	shovel
trowel	sprinkler	hoe	rake

Directions: Write the unifying topic of the group of words.

Topic:

Lincoln	Reagan	Bush	Washington
Nixon	Clinton	Carter	Jefferson

(Exercises adapted from Mikulecky & Jeffries, 1996, p. 70).

The following exercises move students beyond simply finding the relation between a group of individual words to finding the topic of a paragraph.

Example:

In most industrialized countries, family patterns have changed in recent years. Families used to be large, and most mothers stayed home to take care of the children. They were usually entirely responsible for all the housework, too. Fathers did not often see the children, except to play with them on the weekends. Now that families are smaller and many women are working, this has changed somewhat. Fathers often help with the housework. More importantly, they can be much more involved in the lives of their children. They may feed and dress their children and take them to school in the mornings.

What is this paragraph about? Think carefully and then write the topic. It should not be too specific or too general.

Topic:

Explanation: A good topic for this paragraph would be "*How family patterns have changed.*" If you wrote something similar, that is okay, too. For example, "*Recent changes in family patterns*" is also a good answer. "*Families*" is too general. "*How fathers care for their children*" is too specific. (Mikulecky & Jeffries, 1996, p. 83) [italics in the original]

The Main Idea

Once students have identified the topic they must move on to recognize the main idea. What does the author say about the topic? Why, and how was the text written? In order to answer these questions teachers should help students identify the topic sentences, the supporting ideas, and the pattern of organization. The topic sentence will usually include the main idea and clues about the pattern of organization the author will use in the paragraph. Most reading or writing texts will give students practice in how to both identify and write topic sentences. The following is typical of the practice exercises that ESL student texts use.

Directions: The following paragraph needs a topic sentence. Read the paragraph and list the supporting ideas it contains. Then, circle the number of the best topic sentence.

In introductions as well as in general conversations, speakers maintain frequent eye contact. That is, they look directly at each other. Most people become nervous if there is too much eye contact: This is called *staring*. When shaking hands, people shake firmly and *briefly*. The expression "He shakes hands like a dead fish" refers to a limp or weak handshake, a sign in American culture of a weak character. Prolonged handshaking is not unusual.

Supporting Ideas

_____

_____

_____

Topic Sentences

1. Direct eye contact is important during introductions in the United States.
2. In America, limp handshakes are a sign of weak character.
3. Direct eye contact and firm handshakes during introductions are customary in the United States. (Blass & Pike-Baky, 1996, p. 15) [italics in the original]

In the book *Developing Reading Skills* Françoise Grellet provides good examples of exercises teachers can give their students to help them identify the topic and main ideas, recognize the relationship between the various ideas and the topic, and differentiate between the main ideas and the supporting ideas in a text. The following is an example.

> I don't know why UFOs are never sighted over large cities by hordes of people. But it is consistent with the idea that there are no space vehicles from elsewhere in our skies. I suppose it is also consistent with the idea that space vehicles from elsewhere avoid large cities. However, the primary argument against recent extraterrestrial visitation is the absence of evidence.
>
> Take leprechauns. Suppose there are frequent reports of leprechauns. Because I myself am emotionally predisposed in favor of leprechauns, I would want to check the evidence especially carefully. Suppose I find that 500 picnickers independently saw a green blur in the forest. Terrific. But so what? This is evidence only for a green blur. Maybe it was a fast hummingbird. Such cases are reliable but not particularly interesting.
>
> Now suppose that someone reports: "I was walking through the forest and came upon a convention of 7,000 leprechauns. We talked for a while and I was taken down into their hole in the ground and shown pots of gold and feathered green hats. I will reply: "Fabulous! Who else went along?" And he will say, "Nobody," or "My fishing partner." This is a case that is interesting but unreliable. In a case of such importance, the uncorroborated testimony of one or two people is almost worthless. What I want is for the 500 picnickers to come upon the 7,000 leprechauns . . . or vice versa.
>
> The situation is the same with UFOs. The reliable cases are uninteresting and the interesting cases are unreliable. Unfortunately, there are no cases that are both reliable and interesting.

1. Give a title to the passage.
2. If you had to pick out one sentence in the whole passage to sum up the main idea, which one would you choose?
3. Find the topic sentence of each paragraph.

4. Which words of the first paragraph do the second and third paragraphs develop?
   2: _____
   3: _____
5. Find at least one instance of:
   - an illustration: _____
   - a restatement _____
6. What words are used to introduce the two illustrations given in the text?
   _____ _____
7. The following points are all mentioned in the text. Next to each of them, write down M if you think it represents a main idea in the passage and S if you think it is only a non-essential, supporting detail:
   _ Space vehicles from elsewhere avoid large cities.
   _ The primary argument against recent extraterrestrial visitation is the absence of evidence.
   _ The author is emotionally predisposed in favour of leprechauns.
   _ The fact that 500 picnickers saw a green light in the forest is terrific.
   _ The green blur might have been a hummingbird.
   _ Cases such as that of the picnickers are not interesting.
   _ Someone said the leprechauns took him down their hole.
   _ The man said his fishing partner was with him.
   _ The reliable cases are uninteresting and the interesting cases are unreliable.

(Carl Sagan, *Other Worlds*, Bantam, 1975, quoted in Grellet, 1981, pp. 95-96)

Patterns of Organization Through Signal Words

Another way to teach students how to understand what an author is saying is to help the students recognize how the author has organized the information. Is the information in the paragraph organized based on various examples, reasons, a sequence of steps, or of chronological events? Is the author comparing/contrasting several items, or do the ideas have a cause/effect relationship? Teachers can help their students recognize various signal words that authors use to show how the ideas are organized. The following is an example of how signal words can give the reader clues to see that the paragraph's ideas are organized based on their cause-effect relationship. The signal words are underlined.

Example:

In 1989, the Exxon Valdez oil tanker spilled millions of gallons of oil in Alaska's Prince William Sound. Biologists who have studied the local wildlife have noted the consequences of the spill. It has resulted in a great decline in the number of birds in the area. The spill also has caused many young harbor seals to suffer from

> brain damage and death. Killer whales also felt the impact of the spill. Since 1989, more than one third of the whale population has disappeared.
>
> The main idea of this paragraph is: *The oil spill in Alaska resulted in many harmful effects on animals*. The signal words call your attention to each cause or effect the author mentions. (Mikulecky & Jeffries, 1996, p. 102) [italics and underlining in the original]

Mikulecky and Jeffries' text, *More Reading Power*, provides excellent explanations, lists of signal words, and practice exercises for helping students identify patterns of organizations.

Drawing students' attention to an author's signal words is also a good way to help the students realize what type of information is going to follow. For example, if an author uses the word "therefore," that word should tell the students that the statement that follows is going to draw a conclusion or note a result that is linked explicitly with the prior information. Students should be able to identify both the prior information and the concluding statement or result that relates to that information. If an author uses the word "however," two ideas are being contrasted, and the student should be able to point out what the contrasting ideas are. Teachers have to help students put the pieces together, especially when the language and material are difficult. Teachers can show students how the words and information in a text are linked together by making an overhead of a section of the text, highlighting key words, and asking the students lots of specific questions. For example, if the text has the word "however," ask the students what two things are being contrasted. If the text says "this idea . . . ," ask the students what idea the author is talking about.

Developing an Outline

It is often useful to help students develop an outline of the points of the text. In doing so, students will have to pick out the most important information and prioritize it in a hierarchical format. Learning to prioritize information is often quite difficult for beginners, but it is crucial in seeking to understand the author's main points and the flow of the text.

A good way to help students learn to outline a paragraph is to write the structure of the outline for them, label what information they need to put in each part, and then let them fill in the blanks. This will help students see what it means to develop an outline and how to differentiate between the various levels of importance of information in the paragraph. Table 3 is an example of a framework students could be given to fill in based upon a paragraph they would have.

Table 3

Outline of a Paragraph

An outline of a well-organized paragraph might look like this:

I. Topic Sentence : _____ States the main idea.
II. Bridge: _____ Says more about the main idea or leads into the examples (optional)
III. Examples: Support the main idea with facts, details, etc.
    A. Example 1 _____
    B. Example 2 _____
    C. Example 3 _____
IV. Restatement: _____ Restates the main idea

(Source: Blass & Pike-Baky, 1996, p. 39)

Summarizing

Once students are able to prioritize information and recognize various patterns of organization used in texts, which help them understand relationships between the various ideas and the main idea, they are ready to learn how to summarize. Summarizing is a very important skill for students to have. Homework assignments and exams often require students to summarize the main points of a text, so often a percentage of a student's grade is dependent upon his ability to present another author's points accurately and concisely.

A good way to teach students summarizing is to begin by having them summarize a sentence first, then move on to paragraphs, and finally move to multiple paragraphs. Always remember that students must be taught step by step. Simply showing students that they can accomplish the huge task of summarizing a multi-page text by breaking it down into smaller chunks can give students the confidence they need to allow them to do the task (See Mikulecky & Jeffries, 1996, Unit 10, for a good example on how to progress from sentence to paragraph, to multi-paragraph summaries).

Another way to help students learn what it means to summarize well is to present them with a model summary that they simply need to fill in. For more advanced learners this model could look like the template model, as described in chapter three. For beginning students, teachers could use a cloze exercise. This means that teachers provide students with a written summary that leaves out certain key words, with blank spaces where the students can write in the necessary words. Teachers could provide the students with a list of words, or they could leave it up to the students to find the words in the text.

Paraphrasing

When teaching students the skills of summarizing, it is very important that students understand that they must present a fair and accurate report of what the author said. This means that the summary should retain the author's original meaning as much as possible. Although summarizing does require paraphrasing, so as not to plagiarize another author, the words in the paraphrase must be chosen very carefully so that the author's tone, information, and point of view is correctly conveyed. William Smalzer author of the ESL text *Write To Be Read*, gives the following exercise to help students learn the skill of paraphrasing.

Directions: Work with a partner and follow these guidelines to paraphrase the quotations that follow.
a. Find the sentence in the main reading text, "How Your Birth Order Influences your Life Adjustment," and read the whole context (the lines before and after, too) several times.
b. With your partner, rewrite the sentence in your own words. To benefit more from the exercise, change the structure of the original sentence and do not use the words given in italics in your paraphrase.
c. If necessary, revise your first try to make your paraphrase clear, economical, and grammatical.

Example:

Original: ". . .the parents *treat* the child *in accordance with his place* in the family and soon the child recognizes that place."

Paraphrase: The child in a family learns his place in the family from the way that his parents behave with him, which is determined by that child's birth order.

Revision: The child soon learns his role in the family from his parents' behavior with him, which is influenced by the child's birth order.
(Smalzer, 1996, p. 17)

The following exercise is enjoyable for the students and helps show them the importance of word choice when paraphrasing. Before class, the instructor will write a sentence at the top of several eight and a half by eleven sheets of paper. Each paper should have a different sentence. Students should form groups of four to five members. Hand out two or three sheets of paper (with the sentences on top) to each group. In each group, the first person with each paper will paraphrase the original sentence, then fold down the original sentence so that only the first paraphrase is showing. The second person will paraphrase the paraphrase and then fold down the first paraphrase so only the last paraphrase is showing. Each student in the group will take a turn paraphrasing the last sentence that is written on the piece of paper. When everyone in the group has finished open up the paper and see if the last paraphrase retained the same meaning, tone and information as the original sentence. If it did not retain the same basic message, have the students note which word choices changed the meaning? What words could have been

selected to retain the original meaning more accurately? This activity should help students understand the importance of word choice and accuracy when presenting another's ideas.

Asking Questions

Finally, it is important to reiterate the need to gradually increase the level of difficulty and cognitive skill required in planning one's classroom activities and order of events. Teachers should not skip necessary steps when teaching students the process of critical thinking. It is necessary to think of the progression even when planning what questions to ask students about a text. Instructors should not begin by asking students a question which requires analysis. For example, a question that asks about whether or not the reader agrees with an author's conclusion requires analysis. However, questions that ask about the order of events in a storyline, for example, do not require such in depth understanding of the material.

Questioning needs to begin at the first level: understanding. The types of questions that should be asked at this stage are questions that can be answered by rote recall, or questions that ask about the topic, main idea, or what an author specifically says about a particular matter. Smith and Mare's text, *Insights For Today: A High Beginning Reading Skills Text* (1993), is a good example of using an appropriate progression of questions. Following each passage in their book is a fact-finding exercise, consisting of true/false questions, then an information recall section where the students must write down what the text said about a particular point, and finally questions that begin to require analysis. Carefully planning the difficulty progression is an important aspect of leading students towards becoming good critical thinkers.

Synthesizing

The ability to access and synthesize all of one's available and relevant information is another necessary component of critical thinking. Accessing relevant background knowledge will aid in furthering a student's understanding of a text, but perhaps even more importantly, it will help the student think beyond simply what is stated in the text. The synthesis component functions as a liaison between the text, the student, and the world. A student who can effectively access, bring together, and use relevant information and skills should be able to move beyond simply understanding what a text says, to inferring what it implies, and ultimately to analyzing all that it says, implies, and fails to mention.

Formal Schemata

As described in chapter two, educators distinguish between two types of schemata: formal and content. Formal schemata refer to one's knowledge of particular patterns, genres, or means of organization. Even though students may have had previous experience in working with a text patterned in the same way as a text newly presented to them, and they already know skills and strategies that are helpful in working with a text of that genre, they may still need probing or a simple review to remember the "how to" of working with that kind of text. Beginners in a field may either fail to realize what skills and strategies would be most effective in a given situation, or they cannot remember what resources they have available to them.

There are several ways that teachers can help students develop habits of consistently drawing upon their formal schemata. One way is for teachers to periodically review the characteristics of certain text patterns, and the skills and strategies which are most effective for working with each pattern. As the teacher continues to review and build upon the students' understanding of the different patterns, the students should be able to recognize the patterns on their own and be able to use what they remember about the pattern.

Showing students a template or outline of the basic characteristics of various text patterns can help them remember what to expect as they read and to know how to organize the new information they encounter. Another way to help students draw upon their formal schemata is simply to continually point out the clues authors give for understanding their texts. Have students preview the text, read the titles, and look at the pictures. What clues do they give about the text's organization? Does the author use key words to show that two points are going to be contrasted? Is the thesis statement arranged in a particular way so that the reader can guess what organization the body of the essay will have? Often students simply need a reminder or probing to help them use their formal schemata.

Content Schemata

Both teachers and texts often do quite well in helping students access their content schemata. "Content schemata" refer to the knowledge a student has about the particular topic of the text. Often pre-reading questions and discussions are helpful in setting the stage for a reading or writing assignment. Another way to help students access their content schemata is to have the students do summary-response writings. In a summary-response writing students must give an accurate and concise summary of the text followed by a brief personal response. In the response, students can write about a personal experience related to something in the text, relevant information they know about the topic, or a reaction to the text. EAP instructor, Andy Kyllo, had his intermediate reading/writing students keep a summary-response reading journal of all their reading throughout the semester. The format proved to be an effective means of helping the students learn the important skills of summarizing as well as giving them the opportunity to personally interact with the material (Kyllo, 1996).

Using Various Sources.

Included in the area of content knowledge needs to be a discussion about the necessity for students not only to personally interact with the material, but also to be able to bring together the content from various sources that they have read. Students need to be able to read works of several authors and then contrast their points of view. They need to be able to show what things in the different articles they have read support the same points, and what things contradict each other. Students need practice using multiple sources both to support and to show the opposition to their thesis.

In order to do this there are several skills the students will need to practice. Among these skills are: identifying whether or not a piece of information supports or gives evidence against the truth of a given claim, using logical connectors to combine sentences appropriately, and knowing how to cite sources properly. Students need practice in deciding when material they encounter supports a given thesis, and when it contradicts a thesis. Teachers can have students practice these skills by giving them a list of evidence and a thesis, and having the students decide whether the evidence supports the thesis, opposes it, or is not relevant to it. The following is an example.

Directions: Read the following claim and then decide what type of relationship the evidence has to the claim. Write "S" if the evidence supports the claim, "O" of the evidence opposes the claim, and "NR" if the evidence is not relevant.

Claim: All high school graduates should go to college.

Evidence:

_____ 1. Many jobs these days require a college degree.

_____ 2. John liked going to college.

_____ 3. Most colleges these days are over-priced, costing over $25,000 a year.

_____ 4. Almost all of the adults I've talked to told me that their college years were some of the most formative years of their life.

_____ 5. Many college counselors report that a large number of students today end up dropping out of college because they only go to avoid getting a job, joining the military, or because of pressure from their parents.

_____ 6. Statistical evidence shows that people who go to college earn more money and are more responsible citizens than those who don't go.

(Adapted from Bird, 1996).

Teachers should also show students how to combine various ideas about the same topic in order to make their writing more detailed and accurate. Teaching students how to combine sentences through the use of connecting words, and showing them how to use transition words to introduce a new point or a contrasting idea, can help provide students with the tools they need to fit various ideas together. This paper will not go into detail on this point since there are numerous exercises on helping students use connecting and transition words available to teachers. For examples, see Mary Lawrences's *Writing as a Thinking Process* (1997), Betty Azar's *Understanding and Using English Grammar* (1989, chap. 8 and 9), and Beatrice Mikulecky and Linda Jeffries' *More Reading Power* (1996).

Finally, when teaching students to synthesize various sources in their papers, teachers need to stress the importance of citing sources. Students may not be used to citing every source they use. Perhaps they have never even heard about what it means to plagiarize. ESL teachers must emphasize that it is imperative for students to cite their sources when writing, even when they are only borrowing another person's idea and not the person's exact words. Through the teaching of these necessary skills, students can gain tools for properly and effectively synthesizing various sources into their writing.

Building Bridges

If a student simply cannot understand the written material or cannot figure out how to relate to it, teachers may want to either give the student some clues as to the meaning of the text, ask clarifying questions of the students, or help the students create metaphors and analogies to help them build a bridge from an unclear concept to something that they already know (Meyers, 1986). For example, if the text is discussing a historical dilemma that is difficult to relate to, perhaps the teacher could make an analogy to a modern dilemma to which the student could relate. Analogies will not be one hundred percent accurate, of course, but they can be quite useful in helping students understand difficult or abstract concepts by allowing them to see a similarity between the text and a concept which they already understand.

Inferencing

A primary component of using all of one's available information is inferencing. This means that instructors need to help their students use their background information to fill in the areas which the text gives clues about, but does not state explicitly. Students will need to relate the information and clues given in the text to what they already know in order to understand and think about what the text does not say. When inferencing, a person must begin with something that is known, and then go on to something that is not fully known or that cannot be observed directly (Barnet & Bedau, 1993). Does that which is known point the reader to understanding a more "general, inclusive, or fundamental fact of nature" (Barnet & Bedau, 1993, p. 730)? For example, suppose there is evidence for the assertion that "(1) Two hundred thirty persons observed in a sample of 500 smokers have cardiovascular disease" (Barnet & Bedau, 1993, p. 730). From that assertion numerous inferences could be made, but only few would have merit. The following are some of the inferences that one might possibly make based on assertion (1).

(2) All smokers have cardiovascular disease or will develop it during their lifetimes.
(3) Smoking causes cardiovascular disease.
(4) Smoking is a factor in the causation of cardiovascular disease in some persons. (Barnet & Bedau, 1993, pp. 730-1)

The second claim is a generalization of assertion (1). If a student were to make this kind of an inference, the teacher would ask the student to show what evidence or basis there is for "believing that what is true of *some* members of a class is true of them *all* " (Barnet & Bedau, 1993, p. 730) [italics in the original]. Claim (3) inferred that there is naturally a causal relationship between smoking and cardiovascular disease. Even though the original assertion made no mention of a causal relationship, it is likely that one would be inferred based on the original observation. However, teachers must point out that based only on the evidence of assertion (1), an inference as strong as hypothesis (3) does not have merit. That is, there could be other factors involved in the development of cardiovascular disease which are not related, or only indirectly related, to smoking. Therefore, of the three inferences made from assertion (1), the only inference that has merit is that of hypothesis (4). While hypothesis (4) also expresses a causal relationship between smoking and cardiovascular disease, the claim is clearly much weaker than that of hypothesis (3), as it allows for the possibility of other factors being involved in the causation of cardiovascular disease, and it allows for the possibility that cardiovascular disease may not be found in all smokers (Barnet & Bedau, 1993).

Perhaps the best way to teach the skills of inferencing to students is not to begin with a long set of rules and examples, but to first let the students practice looking for clues and making inferences on their own. This allows students to develop motivation on their own for learning the rules of logical inferencing. The following is an example of an inferencing exercise that teachers can use with their students.

> [The] paragraph . . . about Helen Keller's life is followed by four statements. The statements are of four types:

1. Some of the statements are restatements of ideas in the original paragraph. They give the same information in a different way.

2. Some of the statements are inferences (conclusions) that can be drawn from the information given in the paragraph.

3. Some of the statements are not true based on the information given.

4. Some of the statements cannot be proved true or false based on the information given.

Put a check next to all restatements and inferences (types 1 and 2). Note: do not check a statement that is true of itself but cannot be inferred from the paragraph. There is not always a single correct set of answers. Be prepared to discuss your choices with your classmates.

Example

One morning Helen woke early. She could not see the daylight, but she smelled bacon and eggs cooking. She knew it was time to get up. Her mother hurried Helen through breakfast and dressed her carefully. Helen did not know what was happening. Still she felt excited. When her father lifted her into the carriage she wondered where they were going.

__ a. Helen could not see, but there was nothing wrong with her sense of smell.
__ b. Helen had bacon and eggs every day for breakfast.
__ c. There was something unusual about this morning.
__ d. Helen was not very smart.

Explanation

√ a. This is a restatement of the second sentence. Helen could not see the daylight, but she could smell the bacon (there was nothing wrong with her sense of smell.

__ b. This cannot be inferred from the paragraph. Helen obviously recognizes bacon as something she eats for breakfast, but we do not know that she eats it every day.

√ c. This can be inferred from the paragraph. Helen did not know what was happening. Also, the fact that Helen's mother wants her to finish breakfast quickly but dresses her carefully suggests that something important or special is about to happen. Helen feels excited, and she and her father are going someplace.

__ d. This is false. Although she is blind, Helen is able to use the other information around her (smells and feelings) to understand the world.

(Source: Clarke, Dobson, & Silberstein, 1996, pp. 77-8)

It is important to allow students to practice making and evaluating inferences. The ability to make good inferences is difficult, and students need to be given ample opportunity to practice developing this skill. This is an especially important skill to work on in the EAP classroom since it is something which many EAP students have never been encouraged to practice. One quick and easy way for teachers to give students the necessary opportunity for development is to simply have an inferencing activity ready for the students to work on as they enter the classroom. Students often enjoy a challenge, and by presenting the students with small daily challenges the teacher is not only helping the students develop necessary critical thinking skills, but also helping to increase student motivation. Teachers can have the challenge written on the board, or printed out for the students so that they can begin working on the challenge as soon as they enter the classroom. The following are two examples of the types of activities that could be used for the challenges.

Example One: Intermediate students

Directions: Read the paragraph and answer the questions that follow.

> Many times flu and cold germs are spread from one member of the family to another by the contamination left on dishes after washing. A dishwasher helps to relieve this problem by using scalding hot water, much hotter than could be used in hand dish washing. So, not only do you have the convenience of automatic dish washing, but you will also be helping to protect your family's health.
>
> 1. Who is the paragraph meant to be read by?
> 2. What is the purpose of the paragraph?
> 3. Who do you think wrote the paragraph?
> 4. What does the author imply about heat and germs?
> (Source: Lawrence, 1997, p. 22)

Example Two: Intermediate/Advanced students

Directions: Read the following mystery and answer the question that follows. (Note: If students cannot figure out the answer, teachers may give a few more clues after a period of time.)

Mystery 1: The Case of the Big Deal

Dr. Haledjian had just ordered a drink at the bar in the Las Vegas hotel when a young stranger with sun-bleached golden hair and suntanned cheeks sat down next to him.

After asking for a drink, the sunburned young man looked towards Dr. Haledjian. "I'm Clive Vance," he said, pleasantly. "It's sure great to be back in civilization."

The famous detective introduced himself. "You've been out in the desert for a long time, have you?"

"Got back yesterday," said Vance. "Washed the dust out of my ears, and had a barber shave off seven months of beard and cut my hair. Then, I bought all new clothes. I didn't even have to pay for them yet. All I had to do was to show the owner of the clothes store this piece of paper, " he said as he showed Haledjian a report that showed he had found gold " I sure am ready to celebrate."

"You found gold in the desert?"

"Right you are." Vance rubbed his suntanned chin thoughtfully. He lowered his voice to a whisper:

"Listen," he said. "If I can find someone to pay to get the gold out of the ground, I'll make enough to buy ten hotels like this one.

"Of course," he added, "I'm not trying to interest *you* Doctor. But if you know somebody who'd like to make a million dollars or two, let me know. I'm staying in room 210. I can't talk about all the details here, you understand."

"I understand," said Haledjian, "that you should tell a better story if you want some fool to give you money."

How did Dr. Haledjian know that Vance was lying?

Extra clues:
a. Why was Clive Vance's hair blond?
b. T / F Clive had just had his beard shaved off.
c. T / F Clive's face was brown from the sun.

(Source: Clarke, Dobson, & Silberstein, 1997, pp. 82-3)

Example Three: Advanced students

Directions: Read the following riddle and answer the question.

It is the seventh inning and the score is three to two, but not a single guy has crossed second base. How can this be?

Answer: It is a girl's softball game.

Presenting learners with small challenges like these help them learn to read carefully and think critically while they are reading. They can be used either as extra credit or as classroom assignments. Using mystery stories and riddles in the classroom can help both to stimulate and motivate students. Professor Chet Meyers, who begins his classes by

presenting students with a challenge or problem as they enter the room, found that his students even began coming to class early so that they could have more time to work on the challenges (Meyers, 1986).

Author Stance and Word Connotations

In learning to think critically, students need to be made aware of the bias with which most authors write. Students should carefully examine the text they are reading by looking at the author's word choice and the evidence which is included or not included in text to determine what sort of images the author wants to portray to the reader and the probable accuracy of the information. An uncritical reader may assume all the information that is read to be absolute, failing to think of other possible ways the same material could have been presented (Meyers, 1986).

To introduce the students to the importance of word connotations, one ESL teacher suggests drawing two stick figures on the board: one fat, and one thin. Then she asks the students what words they would use to describe the people if they like the way the people look, and what words they would use if they did not like the way the people look (Koshik, 1994, p.2). This simple exercise can introduce students to the importance of paying close attention to word choice when reading and writing.

The following example can be an effective way of introducing both students and teachers to the concept of recognizing an author's stance through word connotation. Notice how the authors of this passage state their point of view simply through the words they chose.

> Italian-American Families
>
> The family system they brought was more patriarchal than that of the "old Americans." It revolved around the father, who ruled with an iron fist. He was the chief provider, but he also controlled the incomes earned by other family members. He dominated his wife and controlled his children. When it was time for the children to marry, he even helped to select their marriage partners. Family norms were clearly spelled out and echoed the patterns established in the old country. If

the system was oppressive, people knew exactly what their roles were and what was expected of them.

Awareness raising activities for students:
1. Underline the words with strong connotations in this passage.
2. How do the authors feel about fathers in traditional Italian families?
3. What would this passage look like if the authors had a positive bias toward traditional Italian fathers. Rewrite the passage, replacing the underlined words with more neutral or positive words.

(Leslie & Korman, 1989, quoted in Koshik, 1994, p.6)

Notice the difference between the original paragraph and one student's rewritten version.

> The family system they brought was more patriarchal than that of the "old Americans." It revolved around the father who organized with a strong leadership. He was the chief provider, but he also managed the incomes earned by the other family members. He was the head of the family who led his wife and his children. When it was time for the children to marry, he helped to select their marriage partners. Family norms were clearly spelled out and echoed the patterns established in the old country. The system was very organized, and people knew exactly what their roles were and what was expected of them. (Koshik, 1994, p. 6)

Even though an author's view may not be introduced explicitly, through careful reading and inference an author's feeling about the subject can usually be recognized. Have the students practice recognizing what examples and information the authors included and what examples and information they left out. Students also need to learn to consider the importance of word choices and the positive or negative connotations they carry. The following example shows how clearly an author's stance can be implicitly stated in a text.

> Discrimination against the Mexican workers here was more severe than in either Texas or New Mexico. Company stores charging outlandish prices often offered the only shopping, and physical brutality against workers who challenged the system was rampant. (Leslie & Korman, 1989, quoted in Koshik, 1994, p.7)
>
> 1. Underline the words with strong connotations.
> 2. Are the authors more sympathetic to the Mexican workers or to the Anlgos who hired them? (Koshik, 1994, p.7)

Helping students recognize an author's bias through word connotations is an important aspect of teaching students to use all the information that is available to them.

Analyzing

"Good thinking requires that one know exactly what he (or someone else) has committed himself to when he (or someone else) made that statement" (Runkle, 1978, p. 3). The commitment includes what a statement says both explicitly and implicitly. In order to know what a statement commits a person to, one must know how to use basic analytical tools. As discussed in chapter two, the primary tool used for analysis is logic.

Perhaps to many, logic sounds like one particular, among many disciplines which is only for the philosophically driven individual. The idea of studying logic may sound "Western," boring, or too theoretical. The fact is however, that using logic is fundamental to being human. Humans "simply cannot *not* use logic" (Hawkins, 1996, p. 154). [italics in the original] Hawkins then adds, "A person must use logic in the very process of attempting to refute it, thereby disproving his or her own argument. . . . It is only through the use of logic that distinctions, for example, between true and false, or one level or realm of reality and another, can be made" (Hawkins, 1996, p. 154).

Furthermore, the study of logical thought should not, and cannot, be confined solely to one discipline of study because of its pervasiveness and necessity throughout every area of life. It is for this reason that the study of logic and correct thinking needs to be a part of the ESL classroom as well. Some may argue that the forms of logic which are explored in this paper are solely "Western" and do not apply throughout the world; however, that which is true--that which corresponds to the way that the world is--is true world-wide, and the rules that allow people to discover what is true apply throughout the whole world. Take for example the law of non-contradiction, which is a law of logic that Eastern philosophers adamantly try to refute. Indian scholar Ravi Zacharias explains, "the more [Eastern philosphers] seek to assault the law of non-contradiction, the more it assaults them" (Zacharias, 1990, p.191). This is because "any system that denies the law of non-

contradiction fails the test of logical consistency because while denying it, it affirms the law at the same time" (Zacharias, 1990, p. 192).

Humans cannot help but use logic, so they should learn to use it well. The discussion will now turn to how to teach ESL students to analyze texts through the use of logic.

Uncovering the Logic

Teachers can begin to teach students analytical skills by pointing out to the students the analytical skills that they already know and use everyday. For example, a student is using logic when s/he tells a teacher that s/he cannot do an assignment because s/he does not have any paper. The basic argument is that

(1) A person needs paper to do this assignment.

(2) S/He does not have any paper.

(3) Therefore, s/he cannot do this assignment.

Even though the student may simply be giving an excuse for why s/he cannot work on the assignment, and the argument may overlook the fact that scratch paper could be used or paper could be borrowed from a friend, the student is still using logic to give a reason to the teacher for a conclusion (that s/he cannot do this assignment). By pointing out examples of the everyday use of logic, teachers can show students how often logic is used in life.

Often logic is disguised in the form of an excuse, literature, or a narrative. More often than not, the logic that people read and produce is not expressed in the form of a logical syllogism (Geisler & Brooks, 1990). Perhaps this is why many people do not recognize the importance and pervasiveness of logical argumentation. One of the first things teachers need to teach their students is how to recognize the logic that is used in the material they encounter everyday. The easiest way to begin uncovering logic is to first look

for the conclusion (Geisler & Brooks, 1990). What is the author's conclusion about "X"? Once the student figures out where the author went in the text, it will be easier to figure out how the author got there (Geisler & Brooks, 1990). Here are two keys for teaching students how to find the conclusion. First, have them look for key words such as "therefore, hence, then, thus, so, so that, . . . or in conclusion" (Geisler & Brooks, 1990, p. 120). Second, if they still have trouble finding the author's conclusion, have them read the first and last paragraphs again. Usually the author states the conclusion at the beginning and/or the end of the text. After they have found the conclusion, the students need to go back and look for how the author arrived at the conclusion. It might be easiest for the students if they can convert the author's reasoning into logical format.

Consider the following example from Lewis Carroll's *Alice's Adventures in Wonderland.*

> And she [Alice] had never forgotten that if you drink much from a bottle marked "poison," it is almost certain to disagree with you sooner or later. However, this bottle was *not* marked "poison," so Alice ventured to taste it, and, finding it very nice . . . she very soon finished it off. (Carroll, 1960, p.22)

The conclusion that Alice makes in this text is that the content of this bottle is certain not to disagree with a person. How did she arrive at this conclusion? Her reasoning looked something like this.

(1) If you drink from a bottle marked "poison," it is almost certain to disagree with a person.

(2) This bottle is not marked "poison."

(3) Therefore, the content of this bottle is certain not to disagree with a person.

Alice clearly had some problems with her logic, since after she drank from the bottle it did disagree with her, but the logic she used can be uncovered with a little bit of work. Students need to learn how to go about uncovering the author's logic.

Truth and Validity

Once students know how to uncover the hidden logic, how are they going to analyze it? There are two primary components involved in teaching logical analysis: truth and validity. An argument or belief claim is not logically sound unless it is based on true premises, and the conclusion is validly inferred. This means that when teaching logic, teachers should concentrate their efforts on helping students understand what it is that merits truth and validity.

Discerning Truth.

As described in chapter two, a belief is true if it accurately reflects the way the world is. Chapter two also discussed the idea that most beliefs that a person holds are not self-justified, but rather they are justified on the basis of being validly inferred from other justified beliefs. This means that behind any one belief there may be a long chain of prior beliefs which give the justification of that belief. The crucial distinction that must be made, but is often not made, is that true beliefs are justified in chains and not circles. This is due to the fact that a belief is true because it accurately reflects the way that the world is, not because a person's beliefs cohere within themselves. True beliefs will naturally cohere amongst themselves, but that is not the basis for their justification; they must also correspond to reality.

In teaching students to discern whether or not a statement is justified, the first step is to have them figure out what the statement means. This is because truth can only be a property of statements which are meaningful (Geisler & Brooks, 1990). Students are going to have an impossible time deciding whether or not a statement is true if they do not even know what the statement means. That is why understanding is a necessary first step to analysis.

Next, the students need to look at the premises of argument and seek to understand whether or not these premises are justified. The claim of a premise may be true because it is a foundational belief, that is, a belief which is self justified, or it may have arisen through inference, but be ultimately based in a foundational belief. On the other hand, of course, the premise could be false and either contradict itself or be based upon a system which coheres solely amongst itself, not with the way that the world is. Teachers need to be concerned with the truth. Are students analyzing what they read to see what justification the author has for making certain claims? Are students looking analytically at the things they write and struggling with questions about the justification they have for making their claims? Of course the grammar and structure of the ESL student's paper are important, but so are the logical flow and the content. There must be a balanced emphasis in the ESL classroom.

Sometimes teachers should question their students about the basis for justifying their claims. Students may simply need a little encouragement before they begin to think more deeply about an issue. Discussions can also be quite helpful in helping students think deeply about what they believe and why they believe it. Prior to, or immediately following, a discussion may be an opportune time to have students do a quick freewriting exercise. Giving students the opportunity to write beforehand could result in a more thoughtful discussion, while allowing them to write afterward may help them to better remember the challenges and arguments that the teacher and other students raised.

Teachers may need to give their students a brief lesson on how it is that beliefs can be shown to be true or false. The following list (see Table 4) should be gone over in class, as well as given to students as a handout for future reference.

Table 4

Discerning True and False Beliefs

The four foundational sources

in which all true beliefs must be ultimately justified.

Perception . . . . . I know there is a tree outside my window because I can see it.

Consciousness . . . I know that I am currently thinking about writing this paper.

Reflection . . . . . I know that A is bigger than C because A is bigger than B, and B is bigger than C.

Memory . . . . . I know I ate curry chicken yesterday because I remember doing it.
(Audi, 1993)

A statement is false if it contradicts any of the four laws of logic.

1. *Law of non-contradiction* - A is not non-A. No two contradictory statements can be both true and false at the same time. This law draws the line between true and false.

   Ex. All truth is relative.

The statement cannot be true because the person is making a claim that all truth except for the truth that "truth is relative" is relative. The statement contradicts itself.

2. *Law of identity* - A is A.

3. *Law of the excluded middle* - Either A or non-A

4. *Law of rational inference* - what is unknown can be validly inferred from what is known

(Geisler & Brooks, 1990, p. 19)

The process

Find the conclusion, then begin to examine the truth of the argument. What support is given for the argument? Do the statements contradict each other? Does the author make his statement clear or are his terms ambiguous? Can the statement be justified by one of the four foundational means? Ultimately, does it seem reasonable to believe that the statements are true?
(Koukl, 1995, pp. 7-11)

Discerning Validity Through Deductive Logic.

This paper has already included quite a bit of discussion about the importance of making valid inferences, but what can teachers do in the classroom to help students learn what this means? The first step is to help students recognize how logic is used to draw conclusions. There are two basic forms of logic: deduction and induction. Deductive logic is used when moving from general principles to specific examples, while inductive logic argues from specific examples and attempts to draw probable conclusions. ESL students are likely to encounter more inductive logic than deductive logic, but it is important for both teachers and students to be prepared for both forms.

Deductive and inductive logic are used differently and take different forms. Argument by way of deduction takes the form of a syllogism.

> The joining of two premises - two statements or propositions taken to be true - to produce a conclusion, a third statement, is called a syllogism (Greek, for "a reckoning together"). The classic example is this:
>
> Major premise: All human beings are mortal.
> Minor Premise: Socrates is a human being.
> Conclusion: Socrates is mortal.
> (Barnet & Bedau, 1993, p. 35)

A syllogism is the basic structure of a deductive argument. In order for a syllogism to be a sound argument it must pass both the truth test and the validity test, that is, the premises must accurately correspond to reality, and the conclusion must be granted if the premises are both granted. Another way to state the validity test is to ask, "If one grants the premises but denies the conclusion, is one caught in a self-contradiction? If so, the argument is valid; if not, the argument is invalid" (Barnet & Bedau, 1993, p. 37). Consider the following example.

No city in Nevada has a population over 200,000.

Denver has a population over 200,000.

Therefore Denver is not a city in Nevada.

(Barnet & Bedau, 1993, p. 36)

A person cannot grant both of the above premises and deny the conclusion without contradicting himself. For this reason, the argument has passed the validity test.

The key for understanding whether or not the syllogism is valid or not is to figure out how the terms relate to one another (Geisler & Brooks, 1990). Unfortunately, the number of forms syllogisms can take and the possible relationships terms may have is too great to provide an exhaustive list, and there is not time to teach them all in the classroom. For these reasons, only some of the most prevalent forms will be discussed. First, have students look at one of the most common forms of a syllogism. There are four basic parts to a premise.

Quantifier	Subject	*Copula*	Predicate
All / Some	A	*is / is not*	*B*

1. The Subject term - the thing or thought about which the assertion is made.
2. The Predicate term - that which is asserted about the subject term.
3. The copula - that which joins the subject and predicate terms (is or is not).
4. Quantifiers - the extent or number of the subject (all, some, none).

(Geisler & Brooks, 1990, p. 26)

Teachers should give the students examples so that they can practice distinguishing between the different parts of a premise.

Now have the students look back at the syllogism. In a syllogism there are six subject/predicate places to fill. However, in order for a syllogism to be valid, only three equivalent terms can be used to fill the places. This is because the terms all have to relate to each other in order to be valid. The term that relates the subject and the predicate in the conclusion is referred to as the middle term. Have the students check an argument to make sure that only three equivalent terms are used and that the middle term is used in each of the

first two premises so that the other two terms may be related together in the conclusion. Secondly, have the students check the syllogisms to make sure that neither an affirmative conclusion is drawn from two negative premises, or a negative conclusion is drawn from two positive premises. Both are impossible. If an argument is attempted in either format it is obviously going to be invalid, and there is no need for further investigation (Geisler & Brooks, 1990).

Now, look at how a conclusion might be validly deduced. The most basic form of valid inference is immediate deduction. This occurs when a conclusion can be drawn based upon only one statement, without any other information (Geisler & Brooks, 1990). For example, if a person says "a cat is on the mat." a person can immediately deduce that "the mat is under the cat" (Barnet & Bedau, 1993). Another example of immediate induction would be if a person stated that "all men are fallible." It can be immediately inferred that "no men are infallible."

Another way that arguments can be validly deduced is through transitive concepts. Look at the following syllogism.

West Linn is smaller than Portland.

Portland is smaller than Los Angeles.

Therefore, West Linn is smaller than Los Angeles.

The conclusion can be derived from the premises. In fact, whether or not the conclusion is stated, a person who accepts the truth of the first two premises must accept the conclusion because it can be directly derived from the premises. This is because the concept "is smaller than" is a transitive concept, that is, a concept that many things share. Since many things share this concept, if A is smaller than B, and B is smaller than C, then A has to be smaller than C (Barnet & Bedau, 1993). Another way to represent this to the students would be to draw concentric circles to show the relationship between the terms. Barnet and Bedau discuss that making a graphic representation of the syllogism is an

adaptation from the Venn diagram, which is a "technique used in elementary formal logic" (Barnet & Bedau, 1993, p. 722) .

Hypothetical syllogisms exhibit another way that conclusions can be logically deduced. A hypothetical syllogism basically says "if X then Y." Then, if X is affirmed, Y can be validly deduced (Geisler & Brooks, 1990). For example, consider the following statement.

If the cat is meowing, then it's hungry.

When the cat is meowing it can be validly deduced that the cat is hungry. The hypothetical syllogism would look like this.

If the cat is meowing, then it's hungry.

The cat is meowing.

Therefore, it is hungry.

The final syllogism form that will be discussed in this paper is referred to as disjunctive syllogism. This type of syllogism occurs when two or more alternatives are stated and only one of the alternatives can be true (Geisler & Brooks, 1990). The following is an example of a valid conclusion derived in a disjunctive syllogism.

> Either censorship of television is overdue, or our society is indifferent to the education of its youth. But, of course, we aren't indifferent; it's censorship that's overdue. (Barnet & Bedau, 1993, p. 725).

If one out of two alternatives is believed to be true, and only one can be true, then if one of the alternatives is negated, the other alternative is the valid conclusion.

Of course there are more forms a syllogism can take, but these are several of the most widely used types that students will encounter. Teachers should make their students aware of how conclusions can be validly inferred by teaching students these various forms. However, it is through continued reference back to these forms, as the students encounter arguments of these types, that the students will really learn how conclusions are validly

inferred. A teacher need not be afraid to give students a reference list of how conclusions can be validly inferred. Although the list may look overwhelming to students at first, over time they will probably be quite grateful. See Table 5 for a summary reference list of how valid conclusions are deduced.

Table 5

Deducing Valid Conclusions

Immediate deduction

The cat is on the mat.

Deduction - *The mat is under the cat.*

Transitive concept

West Linn is smaller than Portland. Portland is smaller than Los Angeles.

Deduction - *West Linn is smaller than Los Angeles.*

Hypothetical syllogism

If the cat is meowing, then it's hungry. The cat is meowing.

Deduction - *It's hungry.*

Disjunctive syllogism

Either censorship of television is overdue, or our society is indifferent to the education of its youth. But , of course, we aren't indifferent;

Deduction - *it's censorship that's overdue.*

(Source: Barnet & Bedau, 1993, p. 725)

By this time a student should have some idea about how a conclusion can be validly deduced. It is now time to help the students see what sort of errors people make when they

end up with invalid conclusions. A conclusion is invalid if a person can accept the truth and validity of the premises, yet deny the conclusion, without contradicting himself. The errors people make when using logic are called fallacies. Fallacies are divided into two parts: formal and informal. Formal fallacies refer to problems with the structure of the argument. Informal fallacies refer to whether or not the premises have a bearing on the case at hand.

First, several formal fallacies will be discussed. One fallacy often made is that the three necessary terms are not distributed properly in the argument. The following is an example.

All angels are immortal.

All saints are immortal.

Therefore, all saints are angels.

(Geisler & Brooks, 1990, p. 83)

The problem is that the middle term, "immortality", is not distributed properly. The middle term needs to refer to the whole of something in order for a conclusion to be valid. Another common fallacy is to refer to more than three equivalent terms in the syllogism. If the premises are not talking about the same terms, a valid conclusion can not be drawn based upon them.

A fallacy often made in hypothetical syllogisms is to overemphasize the causal relationship between the two parts of the assertion. To illustrate this consider the example of the hypothetical syllogism which has been referred to.

If the cat is meowing, then it is hungry.

A person would be committing a fallacy to draw the following conclusion.

The cat is not meowing. Therefore, the cat is not hungry.

It is possible that meowing is simply one of the many ways the cat shows he is hungry. Simply because the cat is not meowing does not mean that he is not hungry.

Other fallacies that people often make fall under the line of informal fallacies. This means that the problem does not have to do with the structure of the argument, rather, the problem is that the premises do not supply sufficient evidence for the conclusion. The following is a list of some of the most common informal fallacies (see Table 6).

Table 6

Selected Common Informal Fallacies

1. **Ambiguity** (the meaning of the terms is not clear) - Ex. "Your argument is sound; nothing but sound."
2. **Attacking the person, not the issue** - Ex. "Kubler-Ross's views on the stages of grief should be rejected because she has contact with a departed spirit."
3. **Argument from ignorance** - Ex. "I can't prove that it's poisonous, so I guess it's safe to pick it up."
4. **Deciding truth by opinion polls** - Ex. "A woman has a right to control her own body; so she has the right to abort the baby in her body."
5. **Deciding truth based on the majority** - Ex. "The vast majority of scientists believe in evolution."
6. **Appeal to authority** - Ex. A person says that we should accept X because Y(person) said it.
7. **Argument because of age** - Ex. "Sexual abstinence before marriage is Victorian."
8. **Begging the question** - Ex. This is when circular argumentation is used.
9. **Special pleading** - Ex. Accept X because selective evidence supports it. However, other evidence is neglected.
10. **Irrelevant conclusion** - Ex. Reincarnation is true because past-life regression answers a lot of questions and helps people makes sense out of their lives.
11. **Hasty generalization** - Ex. "Since all religions offer the same kind of miracles to show that they are true, no claim of miracles really provides proof for any religion."
12. **Nothing buttery** (something is nothing but some aspect of it) - Ex. "Man is nothing but matter in motion." To say that man is matter in motion does not mean that he is nothing more than this.
13. **Category mistake** - Ex. Two ideas mixed up that don't belong together.

(Source: Geisler & Brooks, 1990, pp. 90-110)

Note: It is not recommended that ESL teachers hand this list of possible fallacies to their students on the first day of class. This would overwhelm the students. Rather, this list should be considered as a partial teacher reference list that could possibly be used for

students if they are ready for it. Teachers need to be prepared for pointing out fallacies when the situations arise. This list is intended to help teachers point out, or lead their students to discover, when a fallacy is being committed. Many of these fallacies can be applied to both deductive and inductive logic.

Discerning Validity Through Inductive Logic.

All things cannot be rationally proven by means of deductive logic. There is another kind of logic that is sometimes necessary to use in order to decide things. Induction is when a person looks at the specific facts and tries to draw more general, probable conclusions. "For example, if we ask, 'How many American's believe abortion is wrong?' there is no syllogism that can tell us. We have to ask a whole bunch of Americans in order to find out" (Geisler & Brooks, 1990, p. 132). However, it is highly improbable that one could ask every single American whether or not s/he believes abortion is wrong; therefore, it is necessary to choose a representative sample of the American population to ask, in order to draw any sort of conclusion about the number of Americans that believe abortion is wrong. Once information has been collected, it must be evaluated to see if any conclusions with merit might be drawn from it. The rules that guide this evaluation are the principles of inductive logic (Geisler & Brooks, 1990).

There are a very precious few conclusions that one could prove with one-hundred percent certainty merely by using inductive logic. However, this does not mean that claims are neither true or false, it simply means that most conclusions which are reached by means of inductive logic are probable, as opposed to absolutely sure, because one is using particular incidents and examples to make general, universal claims. What is important when using inductive logic is to reach a high level or degree of certainty. In other words, to strive to improve one's epistemic situation by figuring out what things one has reason to believe, and what things one does not have reason to believe. The truth of some

inductively reasoned beliefs is virtually certain, while the truth of others is virtually impossible. Even such widely accepted truths such as the existence of the law of gravity cannot be said to be proven absolutely because not every single possible test has been done to show that it will always be true (Geisler & Brooks, 1990). However, a person can and should be virtually certain that the law of gravity is true because there is overwhelming evidence for it.

In ESL classes assignments often involve interviewing American people, or giving surveys, and drawing conclusions based on the results. This would be the perfect opportunity for teachers to show their students that there are certain rules to use in deciding which conclusions are probable and which are not probable. There are two types of evidence that a person can use to argue inductively for a conclusion: statistical and empirical. Statistical probability can be calculated when the evidence a person has is numerical. If one has statistical evidence the degree of probability can be calculated in the form of a percentage. However, it is important to make sure that a person's numbers portray accurate information. Here are several rules that students can use for evaluating statistical evidence. Students can ask the question of their own work or of the work of another author.

(1) Are the terms clearly defined? For example, if the evidence for an argument is based upon a survey, did the respondents probably think of the same thing when they read a given question or word?

(2) Is there only one question, or principle of classification raised at a time? For example, a survey may ask about someone's stance on abortion and their stance on the death penalty, but they should not both be asked in the same question. Otherwise, some people will have answered one question and not the other, and some people will have tried to answer both at the same time. In other words, the evidence will not be very useful.

(3) Is the data compiled and displayed in an appropriate format? For example, suppose a survey asking about one's position on abortion gives the following choices from which to select:

(1) It should never be permitted.

(2) It should usually not be permitted.

(3) I don't care either way.

(4) It should usually be permitted.

(5) It should always be permitted.

If twenty people are surveyed and ten people circle (1) and ten people circle (5), but the surveyor only reports the mean score which is (3), the survey would not accurately portray the data which was collected. (The questions for evaluating statistical probability were adapted from Geisler & Brooks, 1990.)

Perhaps the most common way that students will use inductive argumentation in their papers is through argumentation by example. When arguing for a certain position, students often use many examples to "prove" their point. The most common types of examples that students use are making reference to real events, inventing particular instances, or drawing analogies. Although using these types of examples and this type of argumentation can be very powerful, students need to be aware of the effective and ineffective ways that this sort of evidence can be used (Barnet & Bedau, 1993).

Empirical probability cannot be calculated because the evidence is not in the form of numbers. However, similarly to the examination of statistical data, there are questions one can ask to determine the probability of an author's conclusion. Here are the things that should be considered when evaluating empirical data:

(1) How many cases were examined? If a survey claims to represent the opinion of the average Costa Rican, but only ten Costa Ricans are surveyed, the survey can hardly claim to represent the whole of the Costa Rican population.

(2) How representative is the evidence? If the same survey about Costa Ricans asked 500 Costa Ricans about their opinions, but all 500 were businessmen who lived and worked in San José, the survey is still not representative of the whole population. This is because 500 Costa Rican farmers who live in rural villages could be surveyed and the results are likely to be completely opposite.

(3) How carefully was the evidence examined? This question could include a variety of inquiries such as how many possible explanations were considered? How critically was the evidence evaluated?

(4) How does the information gained relate to the body of knowledge we already have in general? Does the information contradict with those things which are sure? Does it help to explain those things which were previously quite uncertain? (Adapted from Geisler & Brooks, 1990, pp. 137-8).

Table 7 presents a brief summary of the questions that can be used to evaluate inductive arguments.

Table 7

Evaluating Inductive Arguments

Questions to consider when evaluating statistical probability
(1) Are the terms clearly defined?
(2) Is there only one question, or principle of classification raised at a time?
(3) Is the data compiled and displayed in an appropriate format?
Questions to consider when evaluating empirical probability
(1) How many cases were examined?
(2) How representative is the evidence?
(3) How carefully was the evidence examined? This question could include a variety of inquiries such as how many possible explanations were considered? How critically was the evidence evaluated?
(4) How does the information gained relate to the body of knowledge we already have in general? Does the information contradict with things that are sure? Does it help to explain those things which were previously quite uncertain?

(Source: Geisler & Brooks, 1990, pp. 134-140)

Prior to asking students to write a whole essay, based on conclusions which have been reasoned through inductive logic, it is best to have them first practice evaluating short statements by asking the questions mentioned above. The following sample activity might provide some ideas for developing practice exercises.

Directions: Are the following arguments strong or weak? Explain your answer.

1. Mark and I both failed the test; therefore, we think it was too hard.

2. I spoke with all but one of your former employers and they all said you would be excellent for this job.

3. Of the 700 people surveyed 90% of them felt strongly about the need for more city parks.

As in deductive reasoning, a number of fallacies can be committed by people using inductive reasoning. The list of fallacies found in Table 8 describes common errors people make when reasoning inductively.

Table 8

Common Fallacies Made in Inductive Logic

1. **Concluding that something is caused by a common antecedent factor** - Ex. The sun rises as a result of the rooster crowing.
2. **Neglecting negative evidence** - Ex. Though ten cases may be in favor of a certain point, the one case that is not in favor should not be neglected.
3. **Reversing the cause and the effect** - Ex. The most intellectual people in society have gone to college. Did college make them intellectual or were the most intellectual people drawn to college?
4. **Reciprocal causality** - Ex. In the example mentioned in number (3) perhaps both conclusions are true. However, it would be considered a fallacy to write that only one was the sole cause.
5. **Confusing the cause and condition** - Ex. A catalyst in a chemistry experiment. The catalyst is not the cause, it just provides the conditions for the experiment to happen more quickly.

(Source: Geisler & Brooks, 1990)

As with the list of fallacies made in deductive logic, a teacher would not give the students a list of fallacies to look for and avoid on the first day of class. Rather, if students are challenged make and evaluate their own arguments and those of others, the students are bound to come up with questions and want reasons. It is at that point, when the students are highly motivated and want to listen, that they will need these resources on logical fallacies. Knowing how and when to apply the rules of logic is indispensable as students learn to analyze texts.

5. SAMPLE LESSON PLAN

Thinking Critically About Tolerance

This is a series of lesson plans designed for EAP students studying in the United States. These lesson plans were developed for high intermediate or advanced students.

Goal: To help students engage in thinking critically about a difficult issue, and to develop their thoughts into an essay.

Objectives: By the end of the lesson the students will be able to:

1. Define tolerance.
2. Show that they understand the Colson article by summarizing it.
3. Write a logical syllogism on each of the following topics: (1) Hitler's actions, and (2) Tolerance.
4. Evaluate their syllogisms based on truth and validity.
5. Take a stance of the issue of tolerance as the primary means of solving the world's problems.
6. Support their position on this article.
7. Synthesize the above-mentioned objectives into an essay.

DAY ONE

Introduction to the topic

Teacher (T) announces that the next assignment is going to be about tolerance. T asks, "Does anyone know what tolerance is?" T may write down on the board any ideas students (Ss) may have. Write down any ideas that could, in some way, be related to the definition of tolerance. T explains that the idea of tolerance is very important in America today. Some people have very strong beliefs concerning tolerance. However, many people have different views about what tolerance is. So, instead of me telling you what tolerance is, I want you to go out and ask five different Americans four questions: (1) Could you please describe what it means to be a tolerant person? (2)What is tolerance? (3) Could you give me an example of when having tolerance is good? (4) Could you give me an example of when having tolerance is not good?

T will go over some quick rules for the interview:

1. Introduce yourself and ask for the person's time.

Example:

Hi my name is _____ I'm an international student studying English. For my English class, I need to ask several Americans a few questions. Do you have a couple of minutes?

2. Ask the questions.
   (1) Could you please describe what it means to be a tolerant person?
   (2) What is tolerance?
   (3) Could you give me an example of when having tolerance is good?
   (4) Could you give me an example of when having tolerance is not good?

   Also, have the Ss note the gender, ethnic background, and approximate age of the respondents.

3. Take notes and/or use a tape recorder.
4. Ask clarifying questions if you do not understand something.
5. Ask the people if they would let you use their name in your class essay.
6. Thank the person for their time and help.

Ss will copy down the questions. Have Ss quickly practice introducing themselves to each other and asking each other the questions.

Tell students to be prepared to discuss their findings during the next class period. Also, tell the students to take careful notes on the interview as they will use the information in later assignments.

HOMEWORK: Interview

DAY TWO

Debrief from interview/warm-up

T will briefly ask the students about how the interviewing went.

Ss will break into groups of three to share their findings with each other. Questions Ss could answer: Did everyone give the same definition? What was interesting to you? What did you learn from the interview?

T will have the class come back together and ask a few students to share their definitions with the class. T will write the definitions on the board.

Freewrite

Students will do a freewrite about the concept of tolerance. They may write about something interesting that they learned from the interview, what they think could be a definition of tolerance, or when they think tolerance is good and/or not good.

First Reading

Read the article one time. (Colson article: see Appendix C.)

Recall/Review questions

Ss will answer the following questions. (See Table 9.)

Table 9

Recall/Review Questions for Colson Article

Mark the following statements true (T) or false (F) based upon the information in the article.

1. The first lesson at the museum is that only some people are guilty of prejudice. _____
2. According to Colson, Hitler's problem was that he was intolerant. _____
3. People must be convinced that there is a law in the universe allowing us to judge actions as either right or wrong. _____

Fill in the blanks based on the information in the article.

4. The museum looks more like a _____ _____ than a museum.
5. The second lesson: It's no fun to be the _____ of prejudice.
6. Today, tolerance means we cannot _____ anyone; we cannot _____ anyone is ultimately _____ or _____.

Answer the following questions based on the information in the article.

7. What is the name of the museum that recently opened in Los Angeles?

   _____

8. After looking at the Holocaust exhibit, the museums visitors pass an electronic sign that asks "Who's responsible?" What is the reply? _____
9. What troubles the author about the museum? _____
10. What does human dignity require the protection of?

    _____

Answers:
1. F 2. F 3. T 4. video arcade 5. target 6. judge, say, right, wrong
7. Museum of Tolerance 8. "You are." 9. the concept of tolerance itself
10. moral law

Second Reading

T gives the following directions to the Ss. Read the article a second time. This time underline any signal words you find (however, next, etc.) and circle any words or phrases that you do not understand.

After the Ss have completed their second reading T will go through the reading with the Ss. T will have an overhead of the article and will ask the Ss questions in order to both check,

and further, their comprehension. Questions will relate to the signal words, difficult words or phrases, and relationships between words.

Ex. 1st ¶ - What was the "Holocaust?"
1st ¶ - What does "the place" refer to?
2nd ¶ - "It's designed" . . . What does "it's" refer to?
2nd ¶ - The word "but" signals contrast. What two ideas are contrasted?
3rd ¶ - "Lessons" . . . Lessons about what?
3rd ¶ - The word "however" signals contrast. What two ideas are contrasted?

T will ask the Ss to point out the signal words as much as possible. Also, if the Ss have problems with words or phrases and they cannot understand the meaning even after the signal words and relationships have been discussed, T will either ask another S to explain the meaning or the T will try to give clues about, or simply explain, the meaning.

Summarize

Either at home or in class the Ss will write a paragraph summarizing the article.

HOMEWORK: Summary

DAY THREE

Uncovering the logic

Pair discussion: Were Hitler's actions in killing six million Jew in the Holocaust right, wrong, or cannot you say either way? What reasons do you have for your answer?

With the class together: T will ask the students to give some of their answers and T will write them on the board. Ex. I think Hitler's actions were _____ because _____ _____.

T asks: What does the author believe?

T will show Ss how to transform their arguments into the form of a logical syllogism.
(1) The Ss will begin by finding their conclusion.

Therefore, Hitler's actions were (right, wrong). **or** Therefore I cannot say whether Hitler's actions were right or wrong.

Show an example from the article: (Either Ss can come up with this example together or T can show the Ss)

a. There is a universal moral law that says it is wrong for anyone to intentionally kill innocent human beings.
b. Hitler intentionally killed six million innocent human beings.
c. Therefore, Hitler's actions were wrong.

T will briefly go over the validity of the syllogism with the Ss. The basic argument is that "It is wrong to do X. Hitler did X. Therefore, in doing X Hitler was wrong."

In small groups, the Ss will come up with their own syllogisms about whether Hitler was right or wrong. T will circulate and may question or probe the Ss to consider logical fallacies if necessary. The primary emphasis here is, "Why was Hitler right or wrong?"

T will have the Ss check the truth of their premises. Pass out handout on *Discerning True and False Beliefs* (See Table 4). T will briefly go over the handout. For an example, T will have the Ss decide why the premises in the above-mentioned example syllogism are true.

Answers:
(a) one's conscience, or through induction (asking many people)
(b) fact (also memory/reflection)

In their small groups the Ss will evaluate their syllogisms.

After they are finished, T will begin to turn the discussion to whether or not tolerance is the primary answer to the world's problems. Will the major world problems be solved if people are more tolerant? Was Hitler's problem that he was intolerant? T can either begin the discussion and then have the students continue discussing in their small groups, or the T may keep the class together.

Writing Assignment

Give Ss a copy of the writing assignment handout and carefully walk the Ss through the assignment step by step. (See Table 10.)

Remind the Ss to use their interview notes, summary of the article, and practice in making logical syllogisms to help them in writing the essay.

Also, hand out a copy of the grading sheet that will be used for the essays so that Ss will know what is expected of them. (See Table 11.)

HOMEWORK: Rough Draft

DAY FOUR

T will collect, read, and comment on the rough drafts.

Note: The class may begin working on some other unrelated lesson on this day.

DAY FIVE

If possible T will have individual conferences with the students about their papers. In the conference, T will both encourage the Ss and probe them to think more deeply about the subject matter by pointing out things the Ss may have never thought about and showing the Ss where the essay should be further developed. If individual conferences are not possible, then T will simply hand back the papers with comments to the Ss.

HOMEWORK: Ss will each write their final copy.

DAY SIX

Hand in the final copy, and T will grade.

Table 10

Writing Assignment Handout

Write an essay on the following topic:

Is tolerance the primary answer to the world's problems?

Primary sources: Chuck Colson's article, "Morality in a Museum? Tolerance Is Not Enough," and your interviews.

Your essay must have the following format.

Title

¶ # 1 **Introduction**
- introduce your reader to the topic of your essay
- define tolerance (a) according to Chuck Colson
  (b) according to your interview (optional)
  (c) your definition for the paper
- thesis statement: state your position

¶ # 2 **Summary of the article by Chuck Colson.** (Here is an example of how you may begin the paragraph. You MAY use the same words).

Chuck Colson addresses this issue in his article, "Morality in a Museum? Tolerance Is Not Enough." He takes the position that (state the position about whether or not tolerance
is the primary answer to the world's problems) _____. (Then give a summary of the article stating how he built his case and the reasons and support he uses to justify his position).

¶ # 3 **Build the case for your position.** (Here is an example of how you may begin the paragraph. You MAY use the same words).

However, I disagree with Colson's position because . . . (support your position with reasons and/or examples)
OR
I agree with Colson's position because . . . (support your position with reasons and/or examples)

¶ # 4 (OPTIONAL - further support)

¶ # 5 **Conclusion**
(Restate your position, summarize your main points, or give your readers applications for their lives).

Table 11

Grading Sheet for Student Essay

NAME: _____ GRADE: /100						
CONTENT / ORGANIZATION						
a. Followed the assignment?	1	2	3	4	5	6
b. Evidence of thought about the topic?	1	2	3	4	5	6
c. Thesis statement (clear purpose)	1	2	3	4	5	6
d. Topic sentences (purpose of ¶'s clear)	1	2	3	4	5	6
e. Appropriate support? (significant, true, valid, insightful, adequately developed)	1	2	3	4	5	6
f. Appropriate transitions?	1	2	3	4	5	6
g. Unity? (all sentence are relevant in each paragraph; all paragraphs are relevant to the thesis)	1	2	3	4	5	6
h. Coherence? (sentences and paragraphs arranged in a logical order)	1	2	3	4	5	6
i. Effective vocabulary?	1	2	3	4	5	6
j. Effective sentence types?	1	2	3	4	5	6
GRAMMAR / MECHANICS						
k. Correct verb tenses/forms?	1	2	3	4	5	6
l. Complete sentences?	1	2	3	4	5	6
m. Correct grammatical structures?	1	2	3	4	5	6
n. Subject/verb agreement?	1	2	3	4	5	6
o. Correct punctuation/spelling/ capitalization?	1	2	3	4	5	6
OTHER						
p. Completed on time						10
COMMENTS:						

(Source: Goldstein, 1997, p.1)

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APPENDIX A

PRELIMINARY EVALUATION: CRITICAL THINKING INSTRUCTION IN READING/WRITING TEXTBOOKS

Mark each book with a yes, maybe, or no. Add brief explanatory comments.

Books:	1	2	3	4	5
Do the aims and objectives of the book match those of the course?					
Are the topics interesting, challenging, and important?					
Does the book appear to value critical thinking?					
Does the book include a progression of activities from the understanding, to the analyzing level?					
Are there ample practice exercises to help develop critical thinking skills?					
Does the book give critical thinking practice with a variety text genres?					
Do the critical thinking exercises fit in with the flow of the text?					

Book titles, authors, publishers, and dates:
1 -
2 -
3 -
4 -
5 -
(Adapted from Grant, 1987, pp. 118-128)

APPENDIX B

SECONDARY EVALUATION: CRITICAL THINKING INSTRUCTION

IN READING/WRITING TEXTBOOKS

Title: _____ Copyright: _____

Author(s): _____ Publisher: _____

Practicality

1. Are the recommended methods and approaches suitable for you, your students, and your classroom?

   Yes Partly No

   Comments: _____

2. Do the materials include the critical thinking skills your students will need (Harmer, 1991)?

   Yes Partly No

   Comments: _____

3. Is the amount and type of material to be covered realistic and adaptable toward the pace and time allotted for the course (Hutchinson & Waters, 1987)?

   Yes Partly No

   Comments: _____

4. Is the proportion of time devoted to the presentation of new skills, the guided practice of the skills and the free-use of the skills appropriate (Cunningsworth, 1984)?

   Yes Partly No

   Comments: _____

5. Do the materials require little preparation time?

   Yes Partly No

   Comments: _____

Motivation

6. Does the text give the students reasons for why it is important that they learn to think critically?

Yes Partly No

Comments: _____

7. Are the topics interesting, challenging, and important for the students to think about?

Yes Partly No

Comments: _____

8. Does the text present several positions on the issues?

Yes Partly No

Comments: _____

9. Are both personal interaction with the passages and classroom discussion of the issues encouraged?

Yes Partly No

Comments: _____

Understanding

10. Do basic fact-finding, recall, and/or comprehension questions following each passage?

Yes Partly No

Comments: _____

11. Does the text teach students how to find the main idea of a passage and how the other ideas relate to the main idea?

Yes Partly No

Comments: _____

12. Does the text teach students to recognize and use various patterns of organization?

Yes Partly No

Comments: _____

13. Does the text teach students how to prioritize information?

Yes Partly No

Comments: _____

Synthesizing

14. Are the students encouraged to access and use their formal schemata?

Yes Partly No

Comments: _____

15. Are the students encouraged to access and their content schemata?

Yes Partly No

Comments: _____

16. Does the text teach students how to synthesize various sources?

Yes Partly No

Comments: _____

17. Does the text give students instruction and practice in making correct inferences?

Yes Partly No

Comments: _____

Analyzing

18. Does the text show how to uncover the logic in various materials?

Yes Partly No

Comments: _____

19. Does the text discuss how to discern truth?

Yes Partly No

Comments: _____

20. Does the text address how to arrive at good conclusions through deductive logic?

Yes Partly No

Comments: _____

21. Does the text address how to arrive at good conclusions through inductive logic?

Yes Partly No

Comments: _____

22. Does the text give the students practice at analyzing conclusions and/ or arguments?

Yes Partly No

Comments: _____

23. Does the text teach the students how to discern an author's point of view?

Yes Partly No

Comments: _____

APPENDIX C

COLSON ARTICLE: LESSON PLAN

Morality in a Museum? Tolerance is Not Enough.

By Chuck Colson (Colson, 1993:114) Reprinted with permission from Prison Fellowship.

A museum about the Holocaust recently opened in Los Angeles, called the Museum of Tolerance. With its whirring computers and flashing lights, the place looks more like a video arcade than a museum.

It's designed not just to inform people, but to change their attitudes--to teach them tolerance.

The lessons start right at the entrance. Visitors must choose between two doors marked "Prejudiced" and "Not Prejudiced." If you try "Not Prejudiced, however, you'll find the door locked. Everyone must walk through the door marked "Prejudiced."

That's the museum's first lesson: Everyone is guilty.

Visitors then proceed to a dark tunnel where recorded voices hiss out insults. "Dumb Polack! Lousy gook! Loud-mouthed kike!" The second lesson: It's no fun to be the target of pre-judice.

Next you enter a room full of colorful touch-screen computers that invite you to confess all your politically incorrect attitudes--on issues from homosexuality to affirmative action to the Rodney King trial. Push a button and a computerized map lights up 250 hate groups across America.

Finally, you reach the Holocaust exhibit itself. The carpet gives way to rough concrete, and you find yourself in a mock gas chamber. The gray walls are lined with videos showing grim scenes from concentration camps.

"Who is responsible?" asks an electronic sign. And a voice replies, "You are, you are, you are"--repeating the phrase in 30 languages.

The Museum of Tolerance is earning mixed reviews. Youngsters raised on MTV love it. Scholars worry that the arcade style trivializes the evil of genocide. But what troubles me about the museum is the concept of tolerance itself.

The problem with Hitler is not that he was intolerant (in the way the word is used today). The problem is that he was wrong--morally wrong. And the only way we can stand against that kind of barbarism is with a strong sense of moral law.

We must be utterly convinced that there is a law in the universe which allows us to judge a Hitler's actions right or wrong.

But that's exactly what the modern concept of tolerance denies.

Today, tolerance means we cannot judge anyone; we cannot say anyone is ultimately right or wrong. How ironic that a museum dedicated to preventing another Holocaust would propose as the answer the mushy notion of tolerance.

Jewish thinker Hanna Arendt knows better. In her book *The Origins of Totalitarianism*, Arendt says the only way to prevent another Holocaust is to find "a new guarantee of human dignity," grounded in "a new law."

Arendt is right: Human dignity requires the protection of moral law. Not a new law, though, but a very old one: Do not steal, do not murder, do not give false testimony, do not covet. The Ten Commandments set up a fence of protection around each individual.

If his neighbors breach the wall, we have a basis for saying it is wrong.

What will never work is the modern notion of tolerance--where everyone and everything is accepted as equally good--even when it's taught with flashing computers and high-tech gadgetry.

Jesus did not say we should overcome evil with tolerance. He said, "Overcome evil with good."